

Interfaces Feature Guide for QFabric Systems

Release

14.1X53



Modified: 2015-09-01

Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, California 94089
USA
408-745-2000
www.juniper.net

Juniper Networks, Junos, Steel-Belted Radius, NetScreen, and ScreenOS are registered trademarks of Juniper Networks, Inc. in the United States and other countries. The Juniper Networks Logo, the Junos logo, and JunosE are trademarks of Juniper Networks, Inc. All other trademarks, service marks, registered trademarks, or registered service marks are the property of their respective owners.

Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

Interfaces Feature Guide for QFabric Systems
14.1X53
Copyright © 2015, Juniper Networks, Inc.
All rights reserved.

The information in this document is current as of the date on the title page.

YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

END USER LICENSE AGREEMENT

The Juniper Networks product that is the subject of this technical documentation consists of (or is intended for use with) Juniper Networks software. Use of such software is subject to the terms and conditions of the End User License Agreement ("EULA") posted at <http://www.juniper.net/support/eula.html>. By downloading, installing or using such software, you agree to the terms and conditions of that EULA.

Table of Contents

	About the Documentation	xi
	Documentation and Release Notes	xi
	Supported Platforms	xi
	Using the Examples in This Manual	xi
	Merging a Full Example	xii
	Merging a Snippet	xii
	Documentation Conventions	xiii
	Documentation Feedback	xv
	Requesting Technical Support	xv
	Self-Help Online Tools and Resources	xv
	Opening a Case with JTAC	xvi
Part 1	Interfaces	
Chapter 1	Understanding Interfaces	3
	Interfaces Overview	3
	Network Interfaces	3
	Special Interfaces	4
	Understanding Interface Naming Conventions	5
	Physical Part of an Interface Name	6
	Logical Part of an Interface Name on a Switch Running QFabric Software Package	10
	Logical Part of a Channelized Interface Name on a Switch Running Enhanced Layer 2 Software	10
	Wildcard Characters in Interface Names	10
	Understanding Interface Ranges	11
	Understanding Management Interfaces	12
	Understanding Port Ranges and System Modes	13
	Port Ranges for Different Media Types	13
	Supported System Modes	37
	Channelizing Interfaces	39
	Configuring Ethernet Loopback Capability	41
	Configuring Gigabit and 10-Gigabit Ethernet Interfaces	41
	Configuring Port Mode	42
	Configuring the Link Settings for Gigabit Ethernet and 10-Gigabit Ethernet Interfaces	42
	Configuring the Speed of Gigabit Ethernet Copper SFP Interfaces	44

	Configuring the IP Options	44
	Configuring the Interface Address	45
	Configuring Interface IPv4 Addresses	46
	Operational Behavior of Interfaces When the Same IPv4 Address Is Assigned to Them	47
	Configuring Interface IPv6 Addresses	49
	Configuring an LPM Table With Junos OS Release 13.2X51-D10	50
	Configuring the Port Type on QFX3600 Standalone Switches	52
	Configuring the QSFP+ Port Type on QFX3500 Standalone Switches	54
	Configuring the QSFP+ Port Type on QFX5100 Devices	56
	Configuring the System Mode	58
	Monitoring Interface Status and Traffic	60
	Monitoring System Process Information	60
	Monitoring System Properties	61
	Troubleshooting Network Interfaces	62
	The interface on the port in which an SFP or SFP+ transceiver is installed in an SFP or SFP+ module is down	62
Part 2	Layer 3 Logical Interfaces	
Chapter 2	Understanding Layer 3 Logical Interfaces	67
	Understanding Layer 3 Logical Interfaces	67
	Configuring a Layer 3 Logical Interface	68
	Verifying That Layer 3 Logical Interfaces Are Working	68
Part 3	Link Aggregation Groups (LAGs) and Link Aggregation Control Protocol (LACP)	
Chapter 3	Understanding LAGs and LACP	73
	Understanding Aggregated Ethernet Interfaces and LACP	73
	Link Aggregation Group	74
	Link Aggregation Control Protocol (LACP)	75
	Configuring Aggregated Ethernet LACP	76
	Configuring Link Aggregation	77
	Creating an Aggregated Ethernet Interface	77
	Configuring the VLAN Name and VLAN ID Number	78
	Configuring Aggregated Ethernet LACP	78
	Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch	79
	Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch	84
	Verifying That LACP Is Configured Correctly and Bundle Members Are Exchanging LACP Protocol Packets	88
	Verifying the LACP Setup	88
	Verifying That LACP Packets Are Being Exchanged	88
	Verifying the Status of a LAG Interface	89
	Troubleshooting an Aggregated Ethernet Interface	89

Part 4	Configuration Statements and Operational Commands	
Chapter 4	Interfaces Configuration Statements	93
	address	96
	alarm (chassis)	99
	auto-negotiation	100
	channel-speed	101
	configured-flow-control	102
	craft-lockout	103
	description (Interfaces)	104
	ethernet (Alarm)	105
	ethernet-switching	106
	ether-options	107
	eui-64	108
	family	109
	fibre-channel (Alarm)	113
	filter	114
	flow-control	116
	fpc	117
	gratuitous-arp-reply	118
	hold-time (Physical Interface)	119
	irb (Interfaces)	121
	inet (interfaces)	124
	inet6 (interfaces)	125
	interface-mode	126
	interface-range	128
	interfaces	130
	link-down	137
	link-mode	138
	link-speed	139
	loopback (Aggregated Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet)	140
	management-ethernet (Alarm)	140
	member	141
	member-range	142
	mtu	143
	no-gratuitous-arp-request	144
	pic	145
	rx-buffers	146
	source	147
	speed	148
	targeted-broadcast	149
	traceoptions (Individual Interfaces)	150
	tx-buffers	151
	unit	153
	vlan-id	154
	vlan-tagging	155
	alarm (chassis)	156
	chassis	157
	chassis (QFabric System)	159

	container-devices	161
	craft-lockout	162
	description (Interfaces)	163
	device-count	164
	disk-failure-action	164
	ethernet	165
	ethernet (Alarm)	165
	ethernet-switching	166
	ether-options	167
	eui-64	168
	fpc	169
	fpc (Interconnect Device)	170
	fte (Port)	171
	interconnect-device (Chassis)	172
	node-device (Chassis)	173
	node-group (Chassis)	174
	on-disk-failure	175
	pic	176
	port-mode	177
	routing-engine	178
	xe (Port)	179
	xle (Port)	180
Chapter 5	IP Directed Broadcast Configuration Statement	181
	targeted-broadcast	181
Chapter 6	LAGs and LACP Configuration Statements	183
	aggregated-devices	184
	aggregated-ether-options	185
	chassis	187
	802.3ad	188
	device-count	189
	ethernet	189
	force-up	190
	lACP (802.3ad)	191
	lACP (Aggregated Ethernet)	192
	periodic	192
Chapter 7	Interfaces Operational Commands	193
	monitor interface	194
	show interfaces diagnostics optics	203
	show interfaces ge	217
	show interfaces (GRE)	232
	show interfaces irb	239
	show interfaces queue	245
	show interfaces xe	285
	show interfaces fabric	303
	show interfaces statistics fabric	324
	show interfaces queue fabric	342
	show interfaces xle	364

Chapter 8	LAGs and LACP Operational Commands	383
	show lacp interfaces	384
	show lacp statistics interfaces (View)	389

List of Tables

	About the Documentation	xi
	Table 1: Notice Icons	xiii
	Table 2: Text and Syntax Conventions	xiii
Part 1	Interfaces	
Chapter 1	Understanding Interfaces	3
	Table 3: Network Interface Types and Purposes	4
	Table 4: Special Interface Types and Purposes	5
	Table 5: Valid Port Ranges on QFX3500 Switches Running QFabric Software Package	15
	Table 6: Valid Port Ranges on QFX3500 Switches Running Enhanced Layer 2 Software	20
	Table 7: Valid Port Ranges on QFX3600 Switches Running QFabric Software Package	23
	Table 8: Valid Port Ranges on QFX3600 Switches Running Enhanced Layer 2 Software	25
	Table 9: Valid Port Ranges on QFX3600 Node Devices Running QFabric Software Package	28
	Table 10: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running Enhanced Layer 2 Software	31
	Table 11: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running QFabric Software Package	34
	Table 12: System Modes Supported on QFX5100 Switches Running Enhanced Layer 2 Software	38
	Table 13: LPM Table Combinations Using l2-profile-one with Junos OS 1Release 3.2X51-D10	51
	Table 14: Example LPM Table Combinations Using lpm-profile With Junos OS 13.2X51-D10	52
	Table 15: System Modes Supported on QFX5100 Switches Running Enhanced Layer 2 Software	58
	Table 16: Summary of System Process Information Output Fields	60
	Table 17: Summary of Key System Properties Output Fields	61
Part 3	Link Aggregation Groups (LAGs) and Link Aggregation Control Protocol (LACP)	
Chapter 3	Understanding LAGs and LACP	73
	Table 18: Components of the Topology for Configuring a LAG Between a QFX3500 Switch and Aggregation Switch	80

Part 4	Configuration Statements and Operational Commands	
Chapter 7	Interfaces Operational Commands	193
	Table 19: Output Control Keys for the monitor interface Command	194
	Table 20: Output Control Keys for the monitor interface traffic Command	195
	Table 21: monitor interface Output Fields	196
	Table 22: show interfaces diagnostics optics Output Fields	203
	Table 23: show interfaces ge Output Fields	218
	Table 24: GRE show interfaces Output Fields	233
	Table 25: show interfaces irb Output Fields	239
	Table 26: Layer 2 Overhead and Transmitted Packets or Byte Counts	246
	Table 27: show interfaces queue Output Fields	249
	Table 28: Byte Count by Interface Hardware	252
	Table 29: show interfaces xe Output Fields	286
	Table 30: show interfaces fabric Output Fields	304
	Table 31: show interfaces statistics fabric Output Fields	325
	Table 32: show interfaces queue fabric Output Fields	342
	Table 33: show interfaces xe Output Fields	365
Chapter 8	LAGs and LACP Operational Commands	383
	Table 34: show lacp interfaces Output Fields	385
	Table 35: show lacp statistics interfaces Output Fields	389

About the Documentation

- Documentation and Release Notes on page xi
- Supported Platforms on page xi
- Using the Examples in This Manual on page xi
- Documentation Conventions on page xiii
- Documentation Feedback on page xv
- Requesting Technical Support on page xv

Documentation and Release Notes

To obtain the most current version of all Juniper Networks[®] technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

Supported Platforms

For the features described in this document, the following platforms are supported:

- QFabric System

Using the Examples in This Manual

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

```
system {
  scripts {
    commit {
      file ex-script.xml;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

```
[edit]
user@host# load merge /var/tmp/ex-script.conf
load complete
```

Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

```
commit {
  file ex-script-snippet.xml; }
```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:

```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see the *CLI User Guide*.

Documentation Conventions

Table 1 on page xiii defines notice icons used in this guide.

Table 1: Notice Icons







Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page xiii defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none">Introduces or emphasizes important new terms.Identifies guide names.Identifies RFC and Internet draft titles.	<ul style="list-style-type: none">A policy <i>term</i> is a named structure that defines match conditions and actions.<i>Junos OS CLI User Guide</i>RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none">To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level.The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i>>;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Encloses a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none">In the Logical Interfaces box, select All Interfaces.To cancel the configuration, click Cancel.

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page at the Juniper Networks Technical Documentation site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>.
- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software version (if applicable).

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or Partner Support Service support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>

- Download the latest versions of software and review release notes:
<http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications:
<http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum:
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.

PART 1

Interfaces

- [Understanding Interfaces on page 3](#)

CHAPTER 1

Understanding Interfaces

- [Interfaces Overview on page 3](#)
- [Understanding Interface Naming Conventions on page 5](#)
- [Understanding Interface Ranges on page 11](#)
- [Understanding Management Interfaces on page 12](#)
- [Understanding Port Ranges and System Modes on page 13](#)
- [Channelizing Interfaces on page 39](#)
- [Configuring Ethernet Loopback Capability on page 41](#)
- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)
- [Configuring the Interface Address on page 45](#)
- [Configuring an LPM Table With Junos OS Release 13.2X51-D10 on page 50](#)
- [Configuring the Port Type on QFX3600 Standalone Switches on page 52](#)
- [Configuring the QSFP+ Port Type on QFX3500 Standalone Switches on page 54](#)
- [Configuring the QSFP+ Port Type on QFX5100 Devices on page 56](#)
- [Configuring the System Mode on page 58](#)
- [Monitoring Interface Status and Traffic on page 60](#)
- [Monitoring System Process Information on page 60](#)
- [Monitoring System Properties on page 61](#)
- [Troubleshooting Network Interfaces on page 62](#)

Interfaces Overview

Juniper Networks devices have two types of interfaces: network interfaces and special interfaces. This topic provides brief information about these interfaces. For additional information, see the *Junos OS Network Interfaces Library for Routing Devices*.

- [Network Interfaces on page 3](#)
- [Special Interfaces on page 4](#)

Network Interfaces

Network interfaces connect to the network and carry network traffic. [Table 3 on page 4](#) lists the types of network interfaces supported.

Table 3: Network Interface Types and Purposes

Type	Purpose
Aggregated Ethernet interfaces	You can group Ethernet interfaces at the physical layer to form a single link-layer interface, also known as a <i>link aggregation group (LAG)</i> or <i>bundle</i> . These aggregated Ethernet interfaces help to balance traffic and increase the uplink bandwidth.
Channelized Interfaces	<p>Depending on the device and software package, 40-Gbps QSFP+ ports can be configured to operate as the following types of interfaces:</p> <ul style="list-style-type: none"> 10-Gigabit Ethernet interfaces (<i>xe</i>) 40-Gigabit Ethernet interfaces (<i>et</i> and <i>xle</i>) 40-Gigabit data plane uplink interfaces (<i>fte</i>) <p>When an <i>et</i> port is channelized to four <i>xe</i> ports, a colon is used to signify the four separate channels. For example, on a QFX3500 standalone switch with port 2 on PIC 1 configured as four 10-Gigabit Ethernet ports, the interface names are <i>xe-0/1/2:0</i>, <i>xe-0/1/2:1</i>, <i>xe-0/1/2:2</i>, and <i>xe-0/1/2:3</i></p> <p>NOTE: You cannot configure channelized interfaces to operate as Virtual Chassis ports.</p>
Ethernet Interfaces	You can configure Gigabit Ethernet, 10-Gigabit Ethernet, 40-Gigabit Ethernet interfaces to connect to other servers, storage, and switches. You can configure 40-Gigabit data plane uplink ports to connect a Node device to an Interconnect devices as well as for Virtual Chassis ports (VCPs).
Fibre Channel interfaces	You can use Fibre Channel interfaces to connect the switch to a Fibre Channel over Ethernet (FCoE) forwarder or a Fibre Channel switch in a storage area network (SAN). You can configure Fibre Channel interfaces only on ports 0 through 5 and 42 through 47 on QFX3500 devices. Fibre Channel interfaces do not forward Ethernet traffic.
LAN access interfaces	You can use these interfaces to connect to other servers, storage, and switches. When you power on a QFX Series product and use the factory-default configuration, the software automatically configures interfaces in access mode for each of the network ports.
Multichassis aggregated Ethernet (MC-AE) interfaces	You can group a LAG on one standalone switch with a LAG on another standalone switch to create a MC-AE. The MC-AE provides load balancing and redundancy across the two standalone switches.
Tagged-access mode interfaces	You can use tagged-access interfaces to connect a switch to an access layer device. Tagged-access interfaces can accept VLAN-tagged packets from multiple VLANs.
Trunk interfaces	You can use trunk interfaces to connect to other switches or routers. To use a port for this type of connection, you must explicitly configure the port interface for trunk mode. The interfaces from the switches or routers must also be configured for trunk mode. In this mode, the interface can be in multiple VLANs and accept tagged packets from multiple devices. Trunk interfaces typically connect to other switches and to routers on the LAN.
Virtual Chassis ports (VCPs)	You can use Virtual Chassis ports to send and receive Virtual Chassis Control Protocol (VCCP) traffic, and to create, monitor, and maintain the Virtual Chassis. On QFX3500, QFX3600, QFX5100, and EX4600 standalone switches, you can configure 40-Gigabit Ethernet QSFP+ uplink ports (non-channelized) or fixed SFP+ 10-Gigabit Ethernet ports as VCPs by issuing the request virtual-chassis-vc-port-set CLI command.

Special Interfaces

Table 4 on page 5 lists the types of special interfaces supported.

Table 4: Special Interface Types and Purposes

Type	Purpose
Console port	Each device has a serial console port, labeled CON or CONSOLE , for connecting tty-type terminals to the switch. The console port does not have a physical address or IP address associated with it. However, it is an interface in the sense that it provides access to the switch.
Loopback interface	A software-only virtual interface that is always up. The loopback interface provides a stable and consistent interface and IP address on the switch.
Management interface	<p>The management Ethernet interface provides an out-of-band method for connecting to a standalone switch and QFabric system.</p> <p>NOTE: On OCX Series switches, the em0 management interface always has the status up in show command outputs, even if the physical port is empty. The me0 interface is a virtual interface between Junos and the host operating system, therefore its status is independent from the status of the physical port.</p>
Routed VLAN interfaces (RVI and IRB interfaces)	<p>Layer 3 routed VLAN interfaces (called RVI in the original CLI, and called IRB in Enhanced Layer 2 Software) route traffic from one broadcast domain to another and perform other Layer 3 functions such as traffic engineering. These functions are typically performed by a router interface in a traditional network.</p> <p>The RVI or IRB functions as a logical router, eliminating the need for having both a switch and a router. The RVI or IRB must be configured as part of a broadcast domain or virtual private LAN service (VPLS) routing instance for Layer 3 traffic to be routed out of it.</p>

Related Documentation

- [Understanding Aggregated Ethernet Interfaces and LACP on page 73](#)
- [Understanding Interface Naming Conventions on page 5](#)
- [Understanding Layer 3 Logical Interfaces on page 67](#)
- [Understanding Management Interfaces on page 12](#)
- *Understanding Integrated Routing and Bridging*
- *Overview of Fibre Channel*

Understanding Interface Naming Conventions

The QFX Series and the EX4600 device uses a naming convention for defining the interfaces that is similar to that of other platforms running under Juniper Networks Junos OS. This topic provides brief information about the naming conventions used for interfaces on the QFX Series and on EX4600 switches.

This topic describes:

- [Physical Part of an Interface Name on page 6](#)
- [Logical Part of an Interface Name on a Switch Running QFabric Software Package on page 10](#)
- [Logical Part of a Channelized Interface Name on a Switch Running Enhanced Layer 2 Software on page 10](#)
- [Wildcard Characters in Interface Names on page 10](#)

Physical Part of an Interface Name

Interfaces in Junos OS are specified as follows:

device-name:type-fpc/pic/port

The convention is as follows:

- *device-name*—(QFabric systems only) The *device-name* is either the serial number or the alias of the QFabric system component, such as a Node device, Interconnect device, or QFabric infrastructure. The name can contain a maximum of 128 characters and cannot contain any colons.
- *type*—The QFX Series and EX4600 device interfaces use the following media types:
 - **fc**—Fibre Channel interface
 - **ge**—Gigabit Ethernet interface
 - **xe**—10-Gigabit Ethernet interface
 - **xle**—40-Gigabit Ethernet interface (QFX3500, QFX3600, and QFX5100 switches running a QFabric software package)
 - **et**—40-Gigabit Ethernet interface (QFX3500, QFX3600, QFX5100, and EX4600 switches running Enhanced Layer 2 Software)
 - **fte**—40-Gigabit data plane uplink interface (QFX3500, QFX3600, and QFX5100 switches running a QFabric software package)
 - **me**—Management interface
 - **em**—Management interface on QFX5100 and EX4600 switches.
- *fpc*—Flexible PIC Concentrator. QFX Series interfaces use the following convention for the FPC number in interface names:
 - On QFX3500, QFX3600, and QFX5100 devices running a QFabric software package, the FPC number is always **0**.

The FPC number indicates the slot number of the line card that contains the physical interface.

- On QFX3500, QFX3600, QFX5100, and EX4600 switches running Enhanced Layer 2 Software, the member ID of a member in a Virtual Chassis determines the FPC number.



NOTE: Every member in a Virtual Chassis must have a unique member ID, otherwise the Virtual Chassis will not be created.

- On standalone QFX5100 and EX4600 switches, the FPC number is always **0**.
- *pic*—QFX Series and EX4600 device interfaces use the following convention for the PIC (Physical Interface Card) number in interface names:

- On a QFX3500 switch running a QFabric software package, PIC 0 can support 48 ports, PIC 1 can support 16 10-Gigabit Ethernet ports, and PIC 2 can support 4 40-Gigabit Ethernet ports.
- On a QFX3500 switch running Enhanced Layer 2 software, PIC 0 can support 48 ports, and PIC 1 can support 16 10-Gigabit Ethernet ports, and 4 40-Gigabit Ethernet ports.
- On a QFX3500 Node device running a QFabric software package, PIC 0 can support 48 ports and PIC 1 can support four 40-Gigabit data plane uplink ports.
- On a QFX3600 switch running a QFabric software package, PIC 0 can support 64 10-Gigabit Ethernet ports, and PIC 1 can support 16 40-Gigabit Ethernet ports.
- On a QFX3600 switch running Enhanced Layer 2 software, PIC 0 can support 64 10-Gigabit Ethernet ports and can also support 16 40-Gigabit Ethernet ports.
- On a QFX3600 Node device running a QFabric software package, PIC 0 can support 56 10-Gigabit Ethernet ports, and PIC 1 can support 8 40-Gigabit data plane uplink ports, and up to 14 40-Gigabit Ethernet ports.
- On a QFX5100-48S switch running Enhanced Layer 2 software, PIC 0 provides six 40-Gbps QSFP+ ports and 48 10-Gigabit Ethernet interfaces.
- On an EX4600 device running Enhanced Layer 2 software, PIC 0 provides 4 40-Gbps QSFP+ ports and 24 10-Gigabit Ethernet interfaces. There are two expansion bays (PIC 1 and PIC 2), and you can insert QFX-EM-4Q expansion modules and EX4600-EM-8F expansion modules. The QFX-EM-4Q expansion module provide 4 40-Gbps QSFP+ ports. The EX4600-EM-8F expansion module provides 8 40-Gbps QSFP+ ports. You can insert any combination of expansion modules. For example, you can insert two EX4600-EM-8F expansion modules, two QFX-EM-4Q expansion modules, or one of each.
- On a QFX5100-48S switch running a QFabric software package, PIC 1 provides six 40-Gbps QSFP+ ports, and PIC 0 provides 48 10-Gigabit Ethernet interfaces.

- On a QFX5100-24Q switch running Enhanced Layer 2 software, PIC 0 provides 24 40-Gbps QSFP+ ports. PIC 1 and PIC 2 can each contain a QFX-EM-4Q expansion module, and each expansion module provides 4 40-Gbps QSFP+ ports.
- On a QFX5100-96S switch running Enhanced Layer 2 software, PIC 0 provides 96 10-Gigabit Ethernet interfaces and 8 40-Gbps QSFP+ ports.
- *port*—Interfaces use the following convention for port numbers:

- On a QFX3500 switch running a QFabric software package, there are 48 network access ports (10-Gigabit Ethernet) labeled 0 through 47 on PIC 0 and, 16 network access ports labeled 0 through 15 on PIC 1, and four 40-Gbps QSFP+ ports labeled Q0 through Q3 on PIC 2. You can use the QSFP+ ports to connect the Node device to Interconnect devices.

By default, the 40-Gbps QSFP+ ports are configured to operate as 10-Gigabit Ethernet ports. You can use QSFP+ to four SFP+ copper breakout cables to connect the 10-Gigabit Ethernet ports to other servers, storage, and switches. Optionally, you can choose to configure the QSFP+ ports as 40-Gigabit Ethernet ports (see [“Configuring the QSFP+ Port Type on QFX3500 Standalone Switches” on page 54](#)).

- On a QFX3500 switch running Enhanced Layer 2 software, there are 48 network access ports labeled 0 through 47 on PIC 0 and 4 40-Gbps QSFP+ ports labeled Q0 through Q3 on PIC 1. See [“Channelizing Interfaces” on page 39](#) for information on how to configure and channelize the 40-Gbps QSFP+ ports.
- On a QFX3600 switch running a QFabric software package, there are 64 network access ports (10-Gigabit Ethernet) labeled Q0 through Q15 on PIC 0, and there are 16 network access ports (40-Gigabit Ethernet) labeled Q0 through Q15 on PIC 1.

By default, all the QSFP+ ports are configured to operate as 40-Gigabit Ethernet ports. Optionally, you can choose to configure the QSFP+ ports as 10-Gigabit Ethernet ports (see [“Configuring the Port Type on QFX3600 Standalone Switches” on page 52](#)) and use QSFP+ to four SFP+ copper breakout cables to connect the 10-Gigabit Ethernet ports to other servers, storage, and switches.

- On a QFX3600 Node device running a QFabric software package, PIC 0 can support up to 56 10-Gigabit Ethernet ports labeled Q2 through Q15, and PIC 1 can support up to 8 40-Gigabit data plane uplink ports labeled Q0 through Q7, and up to 14 40-Gigabit Ethernet ports labeled Q2 through Q15. See *Configuring the Port Type on QFX3600 Node Devices* for information on how to configure the 40-Gbps QSFP+ ports.

On a QFX3600 Node device, by default, four 40-Gbps QSFP+ ports (labeled Q0 through Q3) are configured for uplink connections between your Node device and your Interconnect devices, and twelve 40-Gbps QSFP+ ports (labeled Q4 through Q15) use QSFP+ to four SFP+ copper breakout cables to support up to 48 10-Gigabit Ethernet ports for connections to either endpoint systems (such as servers and storage devices) or external networks. Optionally, you can choose to configure the first eight ports (Q0 through Q7) for uplink connections between your Node device and your Interconnect devices, and ports Q2 through Q15 for 10-Gigabit Ethernet or 40-Gigabit Ethernet connections to either endpoint systems or external networks (see *Configuring the Port Type on QFX3600 Node Devices*).

- On a QFX3600 switch running Enhanced Layer 2 software, PIC 0 can support 64 network access ports (10-Gigabit Ethernet ports) labeled Q0 through Q15 and 16 40-Gigabit Ethernet ports labeled Q0 through Q15. See [“Channelizing Interfaces” on page 39](#) for information on how to configure and channelize the 40-Gbps QSFP+ ports.
- On a QFX5100-48S switch running Enhanced Layer 2 software, PIC 0 can support 48 network access ports (10-Gigabit Ethernet ports) labeled 0 through 47 and 6 40-Gbps QSFP+ ports labeled 48 through 53. See [“Channelizing Interfaces” on page 39](#) for information on how to configure and channelize the 40-Gbps QSFP+ ports.
- On an EX4600 switch running Enhanced Layer 2 software, PIC 0 can support 24 network access ports (10-Gigabit Ethernet ports) labeled 0 through 23 and 4 40-Gbps QSFP+ ports labeled 24 through 27. There are two expansion bays (PIC 1 and PIC 2), and you can insert QFX-EM-4Q expansion modules and EX4600-EM-8F expansion modules. The QFX-EM-4Q expansion module provide 4 40-Gbps QSFP+ ports. The EX4600-EM-8F expansion module provides 8 40-Gbps QSFP+ ports. You can insert any combination of expansion modules. For example, you can insert two EX4600-EM-8F expansion modules, two QFX-EM-4Q expansion modules, or one of each. See [“Channelizing Interfaces” on page 39](#) for information on how to configure and channelize the 40-Gbps QSFP+ ports.
- On a QFX5100-48S switch running a QFabric software package, PIC 0 can support 48 network access ports (10-Gigabit Ethernet ports) labeled 0 through 47, and PIC 1 can support 6 40-Gbps QSFP+ ports labeled 0 through 5. See *Configuring the QSFP+ Port Type on QFX5100 Switches* for information on how to configure the port mode of 40-Gbps QSFP+ ports.
- On a QFX5100-24Q switch running Enhanced Layer 2 software, PIC 0 can support 24 40-Gbps QSFP+ ports labeled 0 through 23. PIC 1 and PIC 2 each support 4 40-Gbps QSFP+ port, for a total of eight 40-Gbps QSFP+ ports. See [“Channelizing Interfaces” on page 39](#) for information on how to configure and channelize the 40-Gbps QSFP+ ports.



NOTE: You cannot channelize the 40-Gbps QSFP+ ports provided in the two QFX-EM-4Q expansion modules. Also, even though there is a total of 128 physical ports, only 104 logical ports can be channelized.

You can configure different system modes to achieve varying levels of port density on the QFX5100-24Q and QFX5100-96S switches. Depending on the system mode you configure, there are restrictions on which ports you can channelize. If you channelize ports that are restricted, the configuration is ignored. See [“Configuring the System Mode” on page 58](#) for information on how to configure the system mode.

- On a QFX5100-96S switch running Enhanced Layer 2 software, PIC 0 can support 96 10-Gigabit Ethernet ports labeled 0 through 95, and 8 40-Gbps QSFP+ ports labeled 96 through 103. See [“Channelizing Interfaces” on page 39](#) for information on how to configure and channelize the 40-Gbps QSFP+ ports.



NOTE: You can only channelize the 40-Gbps QSFP+ ports provided in ports 96 and 100, because only 104 logical ports can be channelized.

You can configure different system modes to achieve varying levels of port density on the QFX5100-24Q and QFX5100-96S switches. Depending on the system mode you configure, there are restrictions on which ports you can channelize. If you channelize ports that are restricted, the configuration is ignored. See [“Configuring the System Mode” on page 58](#) for information on how to configure the system mode.

Logical Part of an Interface Name on a Switch Running QFabric Software Package

The logical unit part of the interface name corresponds to the logical unit number, which can be a number from 0 through 16384. In the virtual part of the name, a period (.) separates the port and logical unit numbers: *device-name* (QFabric systems only): *type-fpc/pic/port.logical-unit-number*. For example, if you issue the **show ethernet-switching interfaces** command on a system with a default VLAN, the resulting display shows the logical interfaces associated with the VLAN:

Interface	State	VLAN members	Blocking
node-device1:xe-0/0/1.0	down	remote-analyzer	unblocked
node-device1:xe-0/0/2.0	down	default	unblocked
node-device1:xe-0/0/3.0	down	default	unblocked

When you configure aggregated Ethernet interfaces, you configure a logical interface, which is called a *bundle* or a *LAG*. Each LAG can include up to eight Ethernet interfaces, depending on the switch model.

Logical Part of a Channelized Interface Name on a Switch Running Enhanced Layer 2 Software

Channelizing enables you to configure four 10-Gigabit Ethernet interfaces from a 40-Gigabit Ethernet QSFP+ interface. By default, a 40-Gigabit Ethernet QSFP+ interface is named *et-fpc/pic/port*. The resulting 10-Gigabit Ethernet interfaces appear in the following format: *xe-fpc/pic/port:channel*, where channel can be a value of 0 through 3.

For example, if an *et* interface named **et-0/0/3** is channelized to four 10-Gigabit Ethernet interfaces, the resulting 10-Gigabit Ethernet interface names will be **xe-0/0/3:0**, **xe-0/0/3:1**, **xe-0/0/3:2**, and **xe-0/0/3:3**:

Interface	Admin	Link	Proto	Local	Remote
xe-0/0/3:0	up	down			
xe-0/0/3:1	up	down			
xe-0/0/3:2	up	down			
xe-0/0/3:3	up	down			

Wildcard Characters in Interface Names

In the **show interfaces** and **clear interfaces** commands, you can use wildcard characters in the *interface-name* option to specify groups of interface names without having to type each name individually. You must enclose all wildcard characters except the asterisk (*) in quotation marks (" ").

- Related Documentation**
- [Interfaces Overview on page 3](#)
 - [Channelizing Interfaces on page 39](#)
 - [Configuring the System Mode on page 58](#)
 - [Understanding Management Interfaces on page 12](#)
 - [Understanding Port Ranges and System Modes on page 13](#)
 - *Rear Panel of a QFX3500 Device*
 - *Front Panel of a QFX3600 Device*
 - *Junos OS Network Interfaces Library for Routing Devices*

Understanding Interface Ranges

You can use the interface ranges to group interfaces of the same type that share a common configuration profile. This helps reduce the time and effort in configuring interfaces. The configurations common to all the interfaces can be included in the interface range definition.

The interface range definition contains the name of the interface range defined, the names of the individual member interfaces that do not fall in a series of interfaces, a range of interfaces defined in the member range, and the configuration statements common to all the interfaces. An interface range defined with member ranges and individual members but without any common configurations is also a valid definition.



NOTE: The interface range definition is supported only for Gigabit Ethernet, 10-Gigabit Ethernet, and Fibre Channel interfaces. OCX Series switches do not support Fibre Channel interfaces.

The common configurations defined in the interface range will be overridden by the local configuration.

The defined interface ranges can be used at places where the **interface** statement is used in the following configuration hierarchies:



NOTE: These statements are not supported on OCX Series switches:

- **protocols isis interface**
- **protocols sflow interfaces**

- Related Documentation**
- [Interfaces Overview on page 3](#)
 - *Interfaces Overview*
 - [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)

- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces](#)
- [Configuring Link Aggregation on page 77](#)
- [Configuring a Layer 3 Logical Interface on page 68](#)
- [Junos OS Network Interfaces Library for Routing Devices](#)
- [interface-range on page 128](#)

Understanding Management Interfaces

You use management interfaces to access devices remotely. Typically, a management interface is not connected to the in-band network, but is connected to a device in the internal network. Through a management interface, you can access the device over the network using utilities such as **ssh** and **telnet** and configure it from anywhere, regardless of its physical location. As a security feature, users cannot log in as **root** through a management interface. To access the device as **root**, you must use the console port. You can also use **root** to log in using SSH.



NOTE: Before you can use management interfaces, you must configure the logical interfaces with valid IP addresses. Juniper Networks does not support configuring two management interfaces in the same subnet.

Management interface port ranges vary based on device type:

- QFX3500 devices:

The valid port range for a management interface (**me**) on a QFX3500 device is between 0 and 6, with a total of seven available ports. On a QFX3500 standalone switch, however, you can only configure **me0** and **me1** as management interfaces. The management interfaces are labeled **C0** and **C1**, and they correspond to **me0** and **me1**. On a QFX3500 Node device, the RJ-45 management interfaces and SFP management interfaces correspond to **me5** and **me6**.

- QFX3600 devices:

There are two RJ-45 management interfaces (labeled **C0** and **C1**) and two SFP management interfaces (labeled **C0s** and **C1s**). On a QFX3600 standalone switch, the RJ-45 management interfaces and SFP management interfaces correspond to **me0** and **me1**. On a QFX3600 Node device, the RJ-45 management interfaces and SFP management interfaces correspond to **me5** and **me6**. Each pair of management interfaces correspond to one Ethernet interface—for example, both RJ-45 management interfaces (labeled **C0** and **C0s**) can correspond to **me0**, and both SFP management interfaces (labeled **C1** and **C1s**) can correspond to **me1**. By default, both RJ-45 management interfaces are active. If you insert an SFP interface into the SFP management port (**C0s**, for example), the SFP interface would become the active management interface, and the corresponding RJ-45 management interface (**C0**) is disabled.



NOTE: On a QFX3600 device, you can use either the RJ-45 or the SFP management interfaces, but not both at the same time.

- On QFX5100 and EX4600 switches, there is one RJ-45 management interface (labeled **C0**) and one SFP management interface (labeled **C1**), and they correspond to em0 and em1. You can use both management interfaces simultaneously.

- On OCX Series switches:

There is one RJ-45 management interface (labeled **MGMT**), which corresponds to em0. The em0 interface always has the status **up** in show command outputs, even if the physical port is empty. The me0 interface is a virtual interface between Junos and the host operating system, therefore its status is independent from the status of the physical port.

- QFabric system:

On a QFabric system, there are management interfaces on the Node devices, Interconnect devices, and Director devices. However, you cannot access the management interfaces on the Node devices or Interconnect devices directly. You can only manage and configure these devices using the Director device. You can connect to the management interface over the network using utilities such as SSH.

For information on how to use management interfaces on a QFabric system, see *Performing the QFabric System Initial Setup on a QFX3100 Director Group and Gaining Access to the QFabric System Through the Default Partition*.

- Related Documentation**
- [Interfaces Overview on page 3](#)
 - [Interfaces Overview](#)

Understanding Port Ranges and System Modes

QFX Series devices and EX4600 switches can support different port ranges depending on the device, media type of the interface, the software that is running on the device, and the system mode.

This topic describes:

- [Port Ranges for Different Media Types on page 13](#)
- [Supported System Modes on page 37](#)

Port Ranges for Different Media Types

The following media types support the following port ranges:

- On a QFX3500 device:

- The valid port range for a Fibre Channel (fc) interface is **0** through **5** and **42** through **47** on PIC **0**, with a total of 12 available Fibre Channel ports.



NOTE: Fibre Channel ports are not supported on QFX3500, QFX3600, and QFX5100 switches running Enhanced Layer 2 software.

- The valid port range for a Gigabit Ethernet (ge) interface is **6** through **41** on PIC **0** because the ports between **0** and **5** and **42** and **47** are reserved as Fibre Channel ports. The total number of available Gigabit Ethernet ports is 36, because 12 of the remaining 48 ports are reserved for Fibre Channel and 10-Gigabit Ethernet interfaces. Fibre Channel ports cannot be configured as Gigabit Ethernet ports.
- The valid port range for a 10-Gigabit Ethernet (xe) interface is **0** through **47** on PIC **0**. The valid port range for a 10-Gigabit Ethernet (xe) interface is **0** through **15** on PIC **1**. The total number of available 10-Gigabit Ethernet ports is 64.
- The valid port range for a 40-Gigabit data plane uplink interface is **0** through **3** on PIC **1**
- The valid port range for a 40-Gigabit Ethernet interface is **0** through **3** on PIC **2**. There are four available ports.
- On a QFX3600 Node device:
 - The valid port range for a 10-Gigabit Ethernet interface is **8** through **63** on PIC **0**. There are 56 available ports.
 - The valid port range for a 40-Gigabit Ethernet interface is **2** through **15** on PIC **1**. There are 14 available ports.
 - The valid port range for a 40-Gigabit data plane uplink interface is **0** through **7** on PIC **1**. There are eight available ports.

See [Table 7 on page 23](#) for physical port to logical port mappings.

- On a QFX3600 switch running Enhanced Layer 2 Software:
 - The valid port range for a 10-Gigabit Ethernet interface is **0** through **63** on PIC **0**. There are 64 available ports.
 - The valid port range for a 40-Gigabit Ethernet interface is **0** through **15** on PIC **0**. There are 16 available ports.

See [Table 8 on page 25](#) for physical port to logical port mappings.

- On QFX5100-48S and QFX5100-48T switches running Enhanced Layer 2 Software:
 - The valid port range for a 10-Gigabit Ethernet interface is **0** through **47** on PIC **0**. There are 48 available ports. When you channelize the 6 40-Gbps QSFP+ ports on **0** through **5** on PIC **1**, there are 72 available ports.



NOTE: On PIC **1**, ports **0** and **1** are reserved for fte ports. You cannot convert these fte ports to xe or xle ports.

- The valid port range for a 40-Gbps QSFP+ port is **0** through **5** on PIC **1**. There are six available ports.

See [Table 10 on page 31](#) for physical port to logical port mappings.

- On EX4600 switches running Enhanced Layer 2 Software:
 - The valid port range for a 10-Gigabit Ethernet interface is **0** through **23** on PIC **0**. There are 24 available ports. When you channelize the 4 40-Gbps QSFP+ ports on **24** through **27** on PIC **0**. There are 40 available ports.

See [Table 10 on page 31](#) for physical port to logical port mappings.

- On QFX5100-48S and QFX5100-48T switches running a QFabric software package:
 - The valid port range for a 10-Gigabit Ethernet interface is **0** through **47** on PIC **0**. There are 48 available ports.
 - The valid port range for a 40-Gbps QSFP+ port is **0** through **5** on PIC **1**. There are six available ports.



NOTE: On PIC 1, ports 0 and 1 are reserved for fte ports. You cannot convert these fte ports to xe or xle ports.

See [Table 11 on page 34](#) for physical port to logical port mappings.

- For QFX5100-24Q and QFX5100-96S switches running Enhanced Layer 2 Software, see [Table 12 on page 38](#) for physical port to logical port mappings for different system modes.

Table 5: Valid Port Ranges on QFX3500 Switches Running QFabric Software Package

Port Number	Fibre Channel Interfaces (On PIC 0)	Gigabit Ethernet Interfaces (On PIC 0)	10-Gigabit Ethernet Interfaces (On PIC 0 and 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)	40-Gigabit Ethernet Interfaces (On PIC 2)
0	fc-0/0/0	Not supported on this port	xe-0/0/0	Not supported on this port	Not supported on this port
1	fc-0/0/1	Not supported on this port	xe-0/0/1	Not supported on this port	Not supported on this port
2	fc-0/0/2	Not supported on this port	xe-0/0/2	Not supported on this port	Not supported on this port
3	fc-0/0/3	Not supported on this port	xe-0/0/3	Not supported on this port	Not supported on this port
4	fc-0/0/4	Not supported on this port	xe-0/0/4	Not supported on this port	Not supported on this port

Table 5: Valid Port Ranges on QFX3500 Switches Running QFabric Software Package (*continued*)

Port Number	Fibre Channel Interfaces (On PIC 0)	Gigabit Ethernet Interfaces (On PIC 0)	10-Gigabit Ethernet Interfaces (On PIC 0 and 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)	40-Gigabit Ethernet Interfaces (On PIC 2)
5	fc-0/0/5	Not supported on this port	xe-0/0/5	Not supported on this port	Not supported on this port
6	Not supported on this port	ge-0/0/6	xe-0/0/6	Not supported on this port	Not supported on this port
7	Not supported on this port	ge-0/0/7	xe-0/0/7	Not supported on this port	Not supported on this port
8	Not supported on this port	ge-0/0/8	xe-0/0/8	Not supported on this port	Not supported on this port
9	Not supported on this port	ge-0/0/9	xe-0/0/9	Not supported on this port	Not supported on this port
10	Not supported on this port	ge-0/0/10	xe-0/0/10	Not supported on this port	Not supported on this port
11	Not supported on this port	ge-0/0/11	xe-0/0/11	Not supported on this port	Not supported on this port
12	Not supported on this port	ge-0/0/12	xe-0/0/12	Not supported on this port	Not supported on this port
13	Not supported on this port	ge-0/0/13	xe-0/0/13	Not supported on this port	Not supported on this port
14	Not supported on this port	ge-0/0/14	xe-0/0/14	Not supported on this port	Not supported on this port
15	Not supported on this port	ge-0/0/15	xe-0/0/15	Not supported on this port	Not supported on this port
16	Not supported on this port	ge-0/0/16	xe-0/0/16	Not supported on this port	Not supported on this port
17	Not supported on this port	ge-0/0/17	xe-0/0/17	Not supported on this port	Not supported on this port
18	Not supported on this port	ge-0/0/18	xe-0/0/18	Not supported on this port	Not supported on this port
19	Not supported on this port	ge-0/0/19	xe-0/0/19	Not supported on this port	Not supported on this port

Table 5: Valid Port Ranges on QFX3500 Switches Running QFabric Software Package (*continued*)

Port Number	Fibre Channel Interfaces (On PIC 0)	Gigabit Ethernet Interfaces (On PIC 0)	10-Gigabit Ethernet Interfaces (On PIC 0 and 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)	40-Gigabit Ethernet Interfaces (On PIC 2)
20	Not supported on this port	ge-0/0/20	xe-0/0/20	Not supported on this port	Not supported on this port
21	Not supported on this port	ge-0/0/21	xe-0/0/21	Not supported on this port	Not supported on this port
22	Not supported on this port	ge-0/0/22	xe-0/0/22	Not supported on this port	Not supported on this port
23	Not supported on this port	ge-0/0/23	xe-0/0/23	Not supported on this port	Not supported on this port
24	Not supported on this port	ge-0/0/24	xe-0/0/24	Not supported on this port	Not supported on this port
25	Not supported on this port	ge-0/0/25	xe-0/0/25	Not supported on this port	Not supported on this port
26	Not supported on this port	ge-0/0/26	xe-0/0/26	Not supported on this port	Not supported on this port
27	Not supported on this port	ge-0/0/27	xe-0/0/27	Not supported on this port	Not supported on this port
28	Not supported on this port	ge-0/0/28	xe-0/0/28	Not supported on this port	Not supported on this port
29	Not supported on this port	ge-0/0/29	xe-0/0/29	Not supported on this port	Not supported on this port
30	Not supported on this port	ge-0/0/30	xe-0/0/30	Not supported on this port	Not supported on this port
31	Not supported on this port	ge-0/0/31	xe-0/0/31	Not supported on this port	Not supported on this port
32	Not supported on this port	ge-0/0/32	xe-0/0/32	Not supported on this port	Not supported on this port
33	Not supported on this port	ge-0/0/33	xe-0/0/33	Not supported on this port	Not supported on this port
34	Not supported on this port	ge-0/0/34	xe-0/0/34	Not supported on this port	Not supported on this port

Table 5: Valid Port Ranges on QFX3500 Switches Running QFabric Software Package (continued)

Port Number	Fibre Channel Interfaces (On PIC 0)	Gigabit Ethernet Interfaces (On PIC 0)	10-Gigabit Ethernet Interfaces (On PIC 0 and 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)	40-Gigabit Ethernet Interfaces (On PIC 2)
35	Not supported on this port	ge-0/0/35	xe-0/0/35	Not supported on this port	Not supported on this port
36	Not supported on this port	ge-0/0/36	xe-0/0/36	Not supported on this port	Not supported on this port
37	Not supported on this port	ge-0/0/37	xe-0/0/37	Not supported on this port	Not supported on this port
38	Not supported on this port	ge-0/0/38	xe-0/0/38	Not supported on this port	Not supported on this port
39	Not supported on this port	ge-0/0/39	xe-0/0/39	Not supported on this port	Not supported on this port
40	Not supported on this port	ge-0/0/40	xe-0/0/40	Not supported on this port	Not supported on this port
41	Not supported on this port	ge-0/0/41	xe-0/0/41	Not supported on this port	Not supported on this port
42	fc-0/0/42	Not supported on this port	xe-0/0/42	Not supported on this port	Not supported on this port
43	fc-0/0/43	Not supported on this port	xe-0/0/43	Not supported on this port	Not supported on this port
44	fc-0/0/44	Not supported on this port	xe-0/0/44	Not supported on this port	Not supported on this port
45	fc-0/0/45	Not supported on this port	xe-0/0/45	Not supported on this port	Not supported on this port
46	fc-0/0/46	Not supported on this port	xe-0/0/46	Not supported on this port	Not supported on this port
47	fc-0/0/47	Not supported on this port	xe-0/0/47	Not supported on this port	Not supported on this port

Table 5: Valid Port Ranges on QFX3500 Switches Running QFabric Software Package (continued)

Port Number	Fibre Channel Interfaces (On PIC 0)	Gigabit Ethernet Interfaces (On PIC 0)	10-Gigabit Ethernet Interfaces (On PIC 0 and 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)	40-Gigabit Ethernet Interfaces (On PIC 2)
Q0	Not supported on this port	Not supported on this port	xe-0/1/0 xe-0/1/1 xe-0/1/2 xe-0/1/3 NOTE: Supported on QFX3500 standalone switch only.	fte-0/1/0	xle-0/2/0
Q1	Not supported on this port	Not supported on this port	xe-0/1/4 xe-0/1/5 xe-0/1/6 xe-0/1/7 NOTE: Supported on QFX3500 standalone switch only.	fte-0/1/1	xle-0/2/1
Q2	Not supported on this port	Not supported on this port	xe-0/1/8 xe-0/1/9 xe-0/1/10 xe-0/1/11 NOTE: Supported on QFX3500 standalone switch only.	fte-0/1/2	xle-0/2/2
Q3	Not supported on this port	Not supported on this port	xe-0/1/12 xe-0/1/13 xe-0/1/14 xe-0/1/15 NOTE: Supported on QFX3500 standalone switch only.	fte-0/1/3	xle-0/2/3

Table 6: Valid Port Ranges on QFX3500 Switches Running Enhanced Layer 2 Software

Port Number	Gigabit Ethernet Interfaces (On PIC 0)	10-Gigabit Ethernet Interfaces (On PIC 0 and 1)	40-Gigabit Ethernet Interfaces (On PIC 1)
0	Not supported on this port	xe-0/0/0	Not supported on this port
1	Not supported on this port	xe-0/0/1	Not supported on this port
2	Not supported on this port	xe-0/0/2	Not supported on this port
3	Not supported on this port	xe-0/0/3	Not supported on this port
4	Not supported on this port	xe-0/0/4	Not supported on this port
5	Not supported on this port	xe-0/0/5	Not supported on this port
6	ge-0/0/6	xe-0/0/6	Not supported on this port
7	ge-0/0/7	xe-0/0/7	Not supported on this port
8	ge-0/0/8	xe-0/0/8	Not supported on this port
9	ge-0/0/9	xe-0/0/9	Not supported on this port
10	ge-0/0/10	xe-0/0/10	Not supported on this port
11	ge-0/0/11	xe-0/0/11	Not supported on this port
12	ge-0/0/12	xe-0/0/12	Not supported on this port
13	ge-0/0/13	xe-0/0/13	Not supported on this port
14	ge-0/0/14	xe-0/0/14	Not supported on this port
15	ge-0/0/15	xe-0/0/15	Not supported on this port
16	ge-0/0/16	xe-0/0/16	Not supported on this port
17	ge-0/0/17	xe-0/0/17	Not supported on this port
18	ge-0/0/18	xe-0/0/18	Not supported on this port
19	ge-0/0/19	xe-0/0/19	Not supported on this port
20	ge-0/0/20	xe-0/0/20	Not supported on this port
21	ge-0/0/21	xe-0/0/21	Not supported on this port
22	ge-0/0/22	xe-0/0/22	Not supported on this port

Table 6: Valid Port Ranges on QFX3500 Switches Running Enhanced Layer 2 Software (*continued*)

Port Number	Gigabit Ethernet Interfaces (On PIC 0)	10-Gigabit Ethernet Interfaces (On PIC 0 and 1)	40-Gigabit Ethernet Interfaces (On PIC 1)
23	ge-0/0/23	xe-0/0/23	Not supported on this port
24	ge-0/0/24	xe-0/0/24	Not supported on this port
25	ge-0/0/25	xe-0/0/25	Not supported on this port
26	ge-0/0/26	xe-0/0/26	Not supported on this port
27	ge-0/0/27	xe-0/0/27	Not supported on this port
28	ge-0/0/28	xe-0/0/28	Not supported on this port
29	ge-0/0/29	xe-0/0/29	Not supported on this port
30	ge-0/0/30	xe-0/0/30	Not supported on this port
31	ge-0/0/31	xe-0/0/31	Not supported on this port
32	ge-0/0/32	xe-0/0/32	Not supported on this port
33	ge-0/0/33	xe-0/0/33	Not supported on this port
34	ge-0/0/34	xe-0/0/34	Not supported on this port
35	ge-0/0/35	xe-0/0/35	Not supported on this port
36	ge-0/0/36	xe-0/0/36	Not supported on this port
37	ge-0/0/37	xe-0/0/37	Not supported on this port
38	ge-0/0/38	xe-0/0/38	Not supported on this port
39	ge-0/0/39	xe-0/0/39	Not supported on this port
40	ge-0/0/40	xe-0/0/40	Not supported on this port
41	ge-0/0/41	xe-0/0/41	Not supported on this port
42	Not supported on this port	xe-0/0/42	Not supported on this port
43	Not supported on this port	xe-0/0/43	Not supported on this port
44	Not supported on this port	xe-0/0/44	Not supported on this port

Table 6: Valid Port Ranges on QFX3500 Switches Running Enhanced Layer 2 Software (*continued*)

Port Number	Gigabit Ethernet Interfaces (On PIC 0)	10-Gigabit Ethernet Interfaces (On PIC 0 and 1)	40-Gigabit Ethernet Interfaces (On PIC 1)
45	Not supported on this port	xe-0/0/45	Not supported on this port
46	Not supported on this port	xe-0/0/46	Not supported on this port
47	Not supported on this port	xe-0/0/47	Not supported on this port
Q0	Not supported on this port	xe-0/1/0:0 xe-0/1/0:1 xe-0/1/0:2 xe-0/1/0:3	et-0/1/0
Q1	Not supported on this port	xe-0/1/1:0 xe-0/1/1:1 xe-0/1/1:2 xe-0/1/1:3	et-0/1/1
Q2	Not supported on this port	xe-0/1/2:0 xe-0/1/2:1 xe-0/1/2:2 xe-0/1/2:3	et-0/1/2
Q3	Not supported on this port	xe-0/1/3:0 xe-0/1/3:1 xe-0/1/3:2 xe-0/1/3:3	et-0/1/3

Table 7: Valid Port Ranges on QFX3600 Switches Running QFabric Software Package

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 1)
Q0	xe-0/0/0	xle-0/1/0
	xe-0/0/1	
	xe-0/0/2	
	xe-0/0/3	
Q1	xe-0/0/4	xle-0/1/1
	xe-0/0/5	
	xe-0/0/6	
	xe-0/0/7	
Q2	xe-0/0/8	xle-0/1/2
	xe-0/0/9	
	xe-0/0/10	
	xe-0/0/11	
Q3	xe-0/0/12	xle-0/1/3
	xe-0/0/13	
	xe-0/0/14	
	xe-0/0/15	
Q4	xe-0/0/16	xle-0/1/4
	xe-0/0/17	
	xe-0/0/18	
	xe-0/0/19	
Q5	xe-0/0/20	xle-0/1/5
	xe-0/0/21	
	xe-0/0/22	
	xe-0/0/23	

Table 7: Valid Port Ranges on QFX3600 Switches Running QFabric Software Package (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 1)
Q6	xe-0/0/24	xle-0/1/6
	xe-0/0/25	
	xe-0/0/26	
	xe-0/0/27	
Q7	xe-0/0/28	xle-0/1/7
	xe-0/0/29	
	xe-0/0/30	
	xe-0/0/31	
Q8	xe-0/0/32	xle-0/1/8
	xe-0/0/33	
	xe-0/0/34	
	xe-0/0/35	
Q9	xe-0/0/36	xle-0/1/9
	xe-0/0/37	
	xe-0/0/38	
	xe-0/0/39	
Q10	xe-0/0/40	xle-0/1/10
	xe-0/0/41	
	xe-0/0/42	
	xe-0/0/43	
Q11	xe-0/0/44	xle-0/1/11
	xe-0/0/45	
	xe-0/0/46	
	xe-0/0/47	

Table 7: Valid Port Ranges on QFX3600 Switches Running QFabric Software Package (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 1)
Q12	xe-0/0/48	xle-0/1/12
	xe-0/0/49	
	xe-0/0/50	
	xe-0/0/51	
Q13	xe-0/0/52	xle-0/1/13
	xe-0/0/53	
	xe-0/0/54	
	xe-0/0/55	
Q14	xe-0/0/56	xle-0/1/14
	xe-0/0/57	
	xe-0/0/58	
	xe-0/0/59	
Q15	xe-0/0/60	xle-0/1/15
	xe-0/0/61	
	xe-0/0/62	
	xe-0/0/63	

Table 8: Valid Port Ranges on QFX3600 Switches Running Enhanced Layer 2 Software

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 0)
Q0	xe-0/0/0:0	et-0/0/0
	xe-0/0/0:1	
	xe-0/0/0:2	
	xe-0/0/0:3	

Table 8: Valid Port Ranges on QFX3600 Switches Running Enhanced Layer 2 Software (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 0)
Q1	xe-0/0/1:0 xe-0/0/1:1 xe-0/0/1:2 xe-0/0/1:3	et-0/0/1
Q2	xe-0/0/2:0 xe-0/0/2:1 xe-0/0/2:2 xe-0/0/2:3	et-0/0/2
Q3	xe-0/0/3:0 xe-0/0/3:1 xe-0/0/3:2 xe-0/0/3:3	et-0/0/3
Q4	xe-0/0/4:0 xe-0/0/4:1 xe-0/0/4:2 xe-0/0/4:3	et-0/0/4
Q5	xe-0/0/5:0 xe-0/0/5:1 xe-0/0/5:2 xe-0/0/5:3	et-0/0/5
Q6	xe-0/0/6:0 xe-0/0/6:1 xe-0/0/6:2 xe-0/0/6:3	et-0/0/6

Table 8: Valid Port Ranges on QFX3600 Switches Running Enhanced Layer 2 Software (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 0)
Q7	xe-0/0/7:0 xe-0/0/7:1 xe-0/0/7:2 xe-0/0/7:3	et-0/0/7
Q8	xe-0/0/8:0 xe-0/0/8:1 xe-0/0/8:2 xe-0/0/8:3	et-0/0/8
Q9	xe-0/0/9:0 xe-0/0/9:1 xe-0/0/9:2 xe-0/0/9:3	et-0/0/9
Q10	xe-0/0/10:0 xe-0/0/10:1 xe-0/0/10:2 xe-0/0/10:3	et-0/0/10
Q11	xe-0/0/11:0 xe-0/0/11:1 xe-0/0/11:2 xe-0/0/11:3	et-0/0/11
Q12	xe-0/0/12:0 xe-0/0/12:1 xe-0/0/12:2 xe-0/0/12:3	et-0/0/12

Table 8: Valid Port Ranges on QFX3600 Switches Running Enhanced Layer 2 Software (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 0)
Q13	xe-0/0/13:0 xe-0/0/13:1 xe-0/0/13:2 xe-0/0/13:3	et-0/0/13
Q14	xe-0/0/14:0 xe-0/0/14:1 xe-0/0/14:2 xe-0/0/14:3	et-0/0/14
Q15	xe-0/0/15:0 xe-0/0/15:1 xe-0/0/15:2 xe-0/0/15:3	et-0/0/15

Table 9: Valid Port Ranges on QFX3600 Node Devices Running QFabric Software Package

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)	40-Gigabit Ethernet Interfaces (On PIC 1)
Q0	Not supported on this port	fte-0/1/0	xle-0/1/0
Q1	Not supported on this port	fte-0/1/1	xle-0/1/1
Q2	xe-0/0/8 xe-0/0/9 xe-0/0/10 xe-0/0/11	fte-0/1/2	xle-0/1/2
Q3	xe-0/0/12 xe-0/0/13 xe-0/0/14 xe-0/0/15	fte-0/1/3	xle-0/1/3

Table 9: Valid Port Ranges on QFX3600 Node Devices Running QFabric Software Package (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)	40-Gigabit Ethernet Interfaces (On PIC 1)
Q4	xe-0/0/16	fte-0/1/4	xle-0/1/4
	xe-0/0/17		
	xe-0/0/18		
	xe-0/0/19		
Q5	xe-0/0/20	fte-0/1/5	xle-0/1/5
	xe-0/0/21		
	xe-0/0/22		
	xe-0/0/23		
Q6	xe-0/0/24	fte-0/1/6	xle-0/1/6
	xe-0/0/25		
	xe-0/0/26		
	xe-0/0/27		
Q7	xe-0/0/28	fte-0/1/7	xle-0/1/7
	xe-0/0/29		
	xe-0/0/30		
	xe-0/0/31		
Q8	xe-0/0/32	Not supported on this port	xle-0/1/8
	xe-0/0/33		
	xe-0/0/34		
	xe-0/0/35		
Q9	xe-0/0/36	Not supported on this port	xle-0/1/9
	xe-0/0/37		
	xe-0/0/38		
	xe-0/0/39		

Table 9: Valid Port Ranges on QFX3600 Node Devices Running QFabric Software Package (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)	40-Gigabit Ethernet Interfaces (On PIC 1)
Q10	xe-0/0/40	Not supported on this port	xle-0/1/10
	xe-0/0/41		
	xe-0/0/42		
	xe-0/0/43		
Q11	xe-0/0/44	Not supported on this port	xle-0/1/11
	xe-0/0/45		
	xe-0/0/46		
	xe-0/0/47		
Q12	xe-0/0/48	Not supported on this port	xle-0/1/12
	xe-0/0/49		
	xe-0/0/50		
	xe-0/0/51		
Q13	xe-0/0/52	Not supported on this port	xle-0/1/13
	xe-0/0/53		
	xe-0/0/54		
	xe-0/0/55		
Q14	xe-0/0/56	Not supported on this port	xle-0/1/14
	xe-0/0/57		
	xe-0/0/58		
	xe-0/0/59		
Q15	xe-0/0/60	Not supported on this port	xle-0/1/15
	xe-0/0/61		
	xe-0/0/62		
	xe-0/0/63		

Table 10: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running Enhanced Layer 2 Software

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 0)
0	xe-0/0/0	Not supported on this port
1	xe-0/0/1	Not supported on this port
2	xe-0/0/2	Not supported on this port
3	xe-0/0/3	Not supported on this port
4	xe-0/0/4	Not supported on this port
5	xe-0/0/5	Not supported on this port
6	xe-0/0/6	Not supported on this port
7	xe-0/0/7	Not supported on this port
8	xe-0/0/8	Not supported on this port
9	xe-0/0/9	Not supported on this port
10	xe-0/0/10	Not supported on this port
11	xe-0/0/11	Not supported on this port
12	xe-0/0/12	Not supported on this port
13	xe-0/0/13	Not supported on this port
14	xe-0/0/14	Not supported on this port
15	xe-0/0/15	Not supported on this port
16	xe-0/0/16	Not supported on this port
17	xe-0/0/17	Not supported on this port
18	xe-0/0/18	Not supported on this port
19	xe-0/0/19	Not supported on this port
20	xe-0/0/20	Not supported on this port
21	xe-0/0/21	Not supported on this port

Table 10: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running Enhanced Layer 2 Software (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 0)
22	xe-0/0/22	Not supported on this port
23	xe-0/0/23	Not supported on this port
24	xe-0/0/24	Not supported on this port
25	xe-0/0/25	Not supported on this port
26	xe-0/0/26	Not supported on this port
27	xe-0/0/27	Not supported on this port
28	xe-0/0/28	Not supported on this port
29	xe-0/0/29	Not supported on this port
30	xe-0/0/30	Not supported on this port
31	xe-0/0/31	Not supported on this port
32	xe-0/0/32	Not supported on this port
33	xe-0/0/33	Not supported on this port
34	xe-0/0/34	Not supported on this port
35	xe-0/0/35	Not supported on this port
36	xe-0/0/36	Not supported on this port
37	xe-0/0/37	Not supported on this port
38	xe-0/0/38	Not supported on this port
39	xe-0/0/39	Not supported on this port
40	xe-0/0/40	Not supported on this port
41	xe-0/0/41	Not supported on this port
42	xe-0/0/42	Not supported on this port
43	xe-0/0/43	Not supported on this port

Table 10: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running Enhanced Layer 2 Software (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 0)
44	xe-0/0/44	Not supported on this port
45	xe-0/0/45	Not supported on this port
46	xe-0/0/46	Not supported on this port
47	xe-0/0/47	Not supported on this port
48	xe-0/0/48:0 xe-0/0/48:1 xe-0/0/48:2 xe-0/0/48:3	et-0/1/0
49	xe-0/0/49:0 xe-0/0/49:1 xe-0/0/49:2 xe-0/0/49:3	et-0/1/1
50	xe-0/0/50:0 xe-0/0/50:1 xe-0/0/50:2 xe-0/0/50:3	et-0/1/2
51	xe-0/0/51:0 xe-0/0/51:1 xe-0/0/51:2 xe-0/0/51:3	et-0/1/3
52	xe-0/0/52:0 xe-0/0/52:1 xe-0/0/52:2 xe-0/0/52:3	et-0/1/4

Table 10: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running Enhanced Layer 2 Software (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 0)
53	xe-0/0/53:0 xe-0/0/53:1 xe-0/0/53:2 xe-0/0/53:3	et-0/1/5

Table 11: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running QFabric Software Package

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)
0	xe-0/0/0	Not supported on this port	Not supported on this port
1	xe-0/0/1	Not supported on this port	Not supported on this port
2	xe-0/0/2	Not supported on this port	Not supported on this port
3	xe-0/0/3	Not supported on this port	Not supported on this port
4	xe-0/0/4	Not supported on this port	Not supported on this port
5	xe-0/0/5	Not supported on this port	Not supported on this port
6	xe-0/0/6	Not supported on this port	Not supported on this port
7	xe-0/0/7	Not supported on this port	Not supported on this port
8	xe-0/0/8	Not supported on this port	Not supported on this port
9	xe-0/0/9	Not supported on this port	Not supported on this port
10	xe-0/0/10	Not supported on this port	Not supported on this port
11	xe-0/0/11	Not supported on this port	Not supported on this port
12	xe-0/0/12	Not supported on this port	Not supported on this port
13	xe-0/0/13	Not supported on this port	Not supported on this port
14	xe-0/0/14	Not supported on this port	Not supported on this port

Table 11: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running QFabric Software Package (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)
15	xe-0/0/15	Not supported on this port	Not supported on this port
16	xe-0/0/16	Not supported on this port	Not supported on this port
17	xe-0/0/17	Not supported on this port	Not supported on this port
18	xe-0/0/18	Not supported on this port	Not supported on this port
19	xe-0/0/19	Not supported on this port	Not supported on this port
20	xe-0/0/20	Not supported on this port	Not supported on this port
21	xe-0/0/21	Not supported on this port	Not supported on this port
22	xe-0/0/22	Not supported on this port	Not supported on this port
23	xe-0/0/23	Not supported on this port	Not supported on this port
24	xe-0/0/24	Not supported on this port	Not supported on this port
25	xe-0/0/25	Not supported on this port	Not supported on this port
26	xe-0/0/26	Not supported on this port	Not supported on this port
27	xe-0/0/27	Not supported on this port	Not supported on this port
28	xe-0/0/28	Not supported on this port	Not supported on this port
29	xe-0/0/29	Not supported on this port	Not supported on this port
30	xe-0/0/30	Not supported on this port	Not supported on this port
31	xe-0/0/31	Not supported on this port	Not supported on this port
32	xe-0/0/32	Not supported on this port	Not supported on this port
33	xe-0/0/33	Not supported on this port	Not supported on this port
34	xe-0/0/34	Not supported on this port	Not supported on this port
35	xe-0/0/35	Not supported on this port	Not supported on this port
36	xe-0/0/36	Not supported on this port	Not supported on this port

Table 11: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running QFabric Software Package (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)
37	xe-0/0/37	Not supported on this port	Not supported on this port
38	xe-0/0/38	Not supported on this port	Not supported on this port
39	xe-0/0/39	Not supported on this port	Not supported on this port
40	xe-0/0/40	Not supported on this port	Not supported on this port
41	xe-0/0/41	Not supported on this port	Not supported on this port
42	xe-0/0/42	Not supported on this port	Not supported on this port
43	xe-0/0/43	Not supported on this port	Not supported on this port
44	xe-0/0/44	Not supported on this port	Not supported on this port
45	xe-0/0/45	Not supported on this port	Not supported on this port
46	xe-0/0/46	Not supported on this port	Not supported on this port
47	xe-0/0/47	Not supported on this port	Not supported on this port
48	Not supported on this port	Not supported on this PIC	fte-0/1/0 NOTE: This interface is a fixed fte interface and cannot be changed to xle.
49	Not supported on this port	Not supported on this PIC	fte-0/1/1 NOTE: This interface is a fixed fte interface and cannot be changed to xle.
50	Not supported on this port	xle-0/1/2	fte-0/1/2 NOTE: By default, this interface is an fte interface but can be configured as an xle interface.
51	Not supported on this port	xle-0/1/3	fte-0/1/3 NOTE: By default, this interface is an fte interface but can be configured as an xle interface.

Table 11: Valid Port Ranges on QFX5100-48S and QFX5100-48T Switches Running QFabric Software Package (*continued*)

Port Number	10-Gigabit Ethernet Interfaces (On PIC 0)	40-Gigabit Ethernet Interfaces (On PIC 1)	40-Gigabit Data Plane Uplink Interfaces (On PIC 1)
52	Not supported on this port	xle-0/1/4 <i>NOTE:</i> By default, this interface is an xle interface but can be configured as an fte interface.	fte-0/1/4
53	Not supported on this port	xle-0/1/5 <i>NOTE:</i> By default, this interface is an xle interface but can be configured as an fte interface.	fte-0/1/5

Supported System Modes



NOTE: There are restrictions on the ports you can channelize on the QFX5100-24Q and QFX5100-96S switches depending on the system mode you configure. If you try to channelize ports that are restricted, the configuration is ignored.

The following system modes are available on the QFX5100-24Q switch:

- Default mode
- Mode-104-port
- Flexi-PIC mode
- Non-oversubscribed mode

See [Table 12 on page 38](#) for more information regarding the supported system modes for your switch.

The following system modes are available on the QFX5100-96S switch:

- Default-mode
- Non-oversubscribed mode

See [Table 12 on page 38](#) for more information regarding the supported system modes for your switch.

Table 12: System Modes Supported on QFX5100 Switches Running Enhanced Layer 2 Software

	Default-mode	Mode-104port	Flexi-pic-mode	Non-oversubscribed-mode
QFX5100-48S and QFX5100-48T	Not supported	Not supported	Not supported	Not supported
QFX5100-24Q	Supported You do not need to configure the switch to be in this mode. On PIC 0, you can channelize all 24 40-Gbps QSFP+ ports. On PIC 1 and PIC 2, the 40-Gbps QSFP+ ports in the expansion modules are supported but cannot be channelized. In this mode, you can have one of two port combinations: 32 40-Gbps QSFP+ ports, or 96 10-Gigabit Ethernet ports plus 8 40-Gbps QSFP+ ports.	Supported On PIC 0, all 24 40-Gbps QSFP+ ports are channelized by default, which provides 96 10-Gigabit Ethernet ports. 40-Gbps QSFP+ ports contained in an expansion module on PIC 1 are supported. On PIC 1, ports 0 and 2 are channelized by default, and ports 1 and 3 are disabled. If 40-Gbps QSFP+ ports contained in an expansion module are detected on PIC 2, they are ignored.	Supported On PIC 0, the first four ports (ports 0 through 3) cannot be channelized. 40-Gbps QSFP+ ports contained in expansion modules on PIC 1 and PIC 2 are supported but cannot be channelized.	Supported All 24 40-Gbps QSFP+ ports on PIC 0 can be channelized to 96 10-Gigabit Ethernet ports. 40-Gbps QSFP+ ports contained in the expansion modules on PIC 1 and PIC 2 are not supported and cannot be channelized. There is no packet loss for packets of any size in this mode.
QFX5100-96S	Supported You do not need to configure the switch to be in this mode. On PIC 0, all 96 10-Gigabit Ethernet ports are supported. You can only channelize the 40-Gbps QSFP+ interfaces to 10-Gigabit Ethernet interfaces on ports 96 and 100. When you channelize the interfaces on ports 96 and 100, ports 97, 98, 99, 101, 102 and 103 are disabled.	Not supported	Not supported	Supported On PIC 0, all 96 10-Gigabit Ethernet ports are supported. However, the eight 40-Gbps QSFP+ ports are not supported and cannot be channelized. There is no packet loss for packets of any size in this mode.

- Related Documentation**
- [Interfaces Overview on page 3](#)
 - [Channelizing Interfaces on page 39](#)
 - [Configuring the System Mode on page 58](#)
 - [Understanding Interface Naming Conventions on page 5](#)
 - [Rear Panel of a QFX3500 Device](#)
 - [Front Panel of a QFX3600 Device](#)

Channelizing Interfaces

The QFX3500, QFX3600, QFX5100, and EX4600 switches provide 40-Gbps QSFP+ ports that can be channelized. Channelization allows you to configure 40-Gbps QSFP+ ports to operate as four 10-Gigabit Ethernet (*xe*) interfaces. You can use QSFP+ to four SFP+ breakout cables or QSFP+ transceivers with fiber breakout cables to connect the 10-Gigabit Ethernet ports to other servers, storage, and switches. By default, the four 40-Gbps QSFP+ ports operate as 40-Gigabit Ethernet (*et*) ports. When an *et* port is channelized to four *xe* ports, a colon is used to signify the four separate channels. For example, on a QFX3500 standalone switch with port 2 on PIC 1 configured as four 10-Gigabit Ethernet ports, the interface names are *xe-0/1/2:0*, *xe-0/1/2:1*, *xe-0/1/2:2*, and *xe-0/1/2:3*.

By default, the 40-Gbps QSFP+ ports on EX4600 and QFX5100 switches are channelized automatically (auto-channelized) if any of the four channels on a 40-Gbps QSFP+ port receive data, unless you have configured channelization either at the chassis level or at the port level. Auto-channelization is not supported on interfaces contained in expansion modules or on Virtual Chassis ports.

You can disable auto-channelization by including the **disable-auto-speed-detection** statement at the **[edit chassis fpc slot-number pic pic-number (port port-number | port-range port-range-low port-range-high) channel-speed]** hierarchy.

There are restrictions on the ports you can channelize on the QFX5100-24Q and QFX5100-96S switches, depending on the system mode you enable. If you try to channelize ports that are restricted, the configuration is ignored. See [“Configuring the System Mode” on page 58](#) for more information.



CAUTION: The Packet Forwarding Engine on the switch is restarted when you configure or delete a port. As a result, you might experience packet loss on the device. When you channelize a 40-Gbps QSFP+ port on the master of a Virtual Chassis, traffic might be disrupted on the master as well as on the line card members, and a mastership switchover occurs.

The following steps describe how to configure a block of ports or an individual port to operate as 10-Gigabit Ethernet ports.

1. To configure a block of 40-Gigabit Ethernet (*et*) ports to operate as 10-Gigabit Ethernet ports, specify a port range and channel speed:

```
[edit chassis fpc fpc-slot pic pic-slot]
user@switch# set port-range port-range-low port-range-high channel-speed speed
```

For example, to configure ports 0 through 3 on PIC 1 to operate as 10-Gigabit Ethernet ports:

```
[edit chassis fpc 0 pic 1]
user@switch# set port-range 0 3 channel-speed 10g
```

2. To configure an individual 40-Gigabit Ethernet (*et*) port to operate as 10-Gigabit Ethernet (*xe*) ports, specify a port number and channel speed:

```
[edit chassis fpc 0 pic 0]
user@switch# set port port-number channel-speed speed
```

For example, to configure port 2 to operate as 10-Gigabit Ethernet ports:

```
[edit chassis fpc 0 pic 0]
user@switch# set port 2 channel-speed 10g
```

3. Review your configuration and issue the **commit** command.

```
[edit]
user@switch# commit
commit complete
```

4. To return a range of ports to the default 40-Gigabit Ethernet configuration, delete the 10g statement:

```
[edit chassis fpc 0 pic 1]
user@switch# delete port-range port-range-low port-range-high channel-speed speed
```

For example, to return ports 0 through 3 to the default 40-Gigabit Ethernet configuration:

```
[edit chassis fpc 0 pic 1]
user@switch# delete port-range 0 3 channel-speed 10g
```

5. Review your configuration and issue the **commit** command.

```
[edit]
user@switch# commit
commit complete
```

6. To return a port to the default 40-Gigabit Ethernet configuration, delete the 10g statement:

```
[edit chassis fpc 0 pic 0]
user@switch# delete port port-number channel-speed speed
```

For example, to return port 2 to the default 40-Gigabit Ethernet configuration:

```
[edit chassis fpc 0 pic 0]
user@switch# delete port 2 channel-speed 10g
```

7. Review your configuration and issue the **commit** command.

```
[edit]
user@switch# commit
commit complete
```

The following steps describe how to disable auto-channelization at the port level.

1. To disable auto-channelization at the port level, include the **disable** statement:

```
[edit]
user@switch# set chassis fpc slot-number pic pic-number (port port-number |
  port-range port-range-low port-range-high) channel-speed
  disable-auto-speed-detection
```


For example, to disable auto-channelization for one port:

```
[edit]
user@switch# set chassis fpc 0 pic 0 port 2 channel-speed
disable-auto-speed-detection
```

For example, to disable auto-channelization for a range of ports:

```
[edit]
user@switch# set chassis fpc 0 pic 0 port-range 2 4 channel-speed
disable-auto-speed-detection
```

2. Review your configuration and issue the **commit** command.

```
[edit]
user@switch# commit
commit complete
```

- Related Documentation**
- [Configuring the System Mode on page 58](#)
 - [channel-speed on page 101](#)
 - [fpc on page 117](#)
 - [pic on page 145](#)

Configuring Ethernet Loopback Capability

To place an interface in loopback mode, include the **loopback** statement:

```
loopback;
```

To return to the default—that is, to disable loopback mode—delete the **loopback** statement from the configuration:

```
[edit]
user@switch# delete interfaces interface-name ether-options loopback
```

To explicitly disable loopback mode, include the **no-loopback** statement:

```
no-loopback;
```

You can include the **loopback** and **no-loopback** statements at the following hierarchy levels:

- **[edit interfaces *interface-name* aggregated-ether-options]**
- **[edit interfaces *interface-name* ether-options]**

- Related Documentation**
- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)
 - [Configuring Gigabit and 10-Gigabit Ethernet Interfaces](#)

Configuring Gigabit and 10-Gigabit Ethernet Interfaces

Devices include a factory default configuration that:

- Enables all 10-Gigabit Ethernet network interfaces on the switch
- Sets a default port mode (access)
- Sets default link settings
- Specifies a logical unit (**unit 0**) and assigns it to **family ethernet-switching**
- Configures Storm Control on all 10-Gigabit Ethernet network interfaces
- Provides basic Rapid Spanning Tree Protocol (RSTP) and Link Layer Discovery Protocol (LLDP) configuration



NOTE: RSTP and LLDP are not supported on the OCX Series.

This topic describes:

- [Configuring Port Mode on page 42](#)
- [Configuring the Link Settings for Gigabit Ethernet and 10-Gigabit Ethernet Interfaces on page 42](#)
- [Configuring the Speed of Gigabit Ethernet Copper SFP Interfaces on page 44](#)
- [Configuring the IP Options on page 44](#)

Configuring Port Mode

If you are connecting a switch to other switches and to routers on the LAN, you need to assign the interface to a logical port and you need to configure the logical port as a trunk port.

To configure a Gigabit Ethernet or 10-Gigabit interface for trunk port mode on the original CLI:

```
[edit]
user@switch# set interfaces interface-name unit logical-unit-number family ethernet-switching
port-mode trunk
```

To configure a Gigabit Ethernet or 10-Gigabit interface for trunk port mode on the Enhanced Layer 2 software (ELS):

```
[edit]
user@switch# set interfaces interface-name unit logical-unit-number family ethernet-switching
interface-mode trunk
```

Configuring the Link Settings for Gigabit Ethernet and 10-Gigabit Ethernet Interfaces

Devices include a factory default configuration that enables Gigabit Ethernet and 10-Gigabit Ethernet and interfaces with applicable link settings.

The following default configurations are available on Gigabit Ethernet interfaces:

- The speed for Gigabit Ethernet interfaces is set to 1000 Mbps by default. The speed for 1-Gigabit Ethernet Copper SFP interfaces is 1 Gbps by default.
- Gigabit Ethernet interfaces operate in full-duplex mode.

- Autonegotiation is not supported.

To enable autonegotiation, issue the **set interfaces *name* ether-options auto-negotiate** command.

To disable autonegotiation, issue the **delete interfaces *name* ether-options auto-negotiate** command.



NOTE: Do not use the **set interface *name* ether-options no-auto-negotiate** command to remove the autonegotiation configuration.

The following default configurations are available on 10-Gigabit Ethernet interfaces:

- The speed for 10-Gigabit Ethernet interfaces is set to 10 Gbps by default. The speed cannot be configured.
- 10-Gigabit Ethernet interfaces operate in full-duplex mode by default.
- Autonegotiation is not supported.

To enable autonegotiation, issue the **set interfaces *name* ether-options auto-negotiate** command.

To disable autonegotiation, issue the **delete interfaces *name* ether-options auto-negotiate** command.



NOTE: Do not use the **set interface *name* ether-options no-auto-negotiate** command to remove the autonegotiation configuration.

The **ether-options** statement enables you to modify the following options:

- **802.3ad**—Specify an aggregated Ethernet bundle for both Gigabit Ethernet and 10-Gigabit Ethernet interfaces.
- **autonegotiation**—Enable or disable autonegotiation of flow control, link mode, and speed for Gigabit Ethernet interfaces.



NOTE: Autonegotiation is not supported on EX4600, QFX5100, and OCX Series devices.

- **link-mode**—Specify **full-duplex**, **half-duplex**, or **automatic** for Gigabit Ethernet interfaces.
- **loopback**—Enable or disable a loopback interface for both Gigabit Ethernet and 10-Gigabit Ethernet interfaces.

To set **ether-options** for both Gigabit Ethernet and 10-Gigabit Ethernet interfaces:

```
[edit]
user@switch# set interfaces interface-name ether-options
```

Configuring the Speed of Gigabit Ethernet Copper SFP Interfaces

You can configure the speed of Gigabit Ethernet copper SFP interfaces on the EX4600, QFX5100, and OCX Series devices. The default speed is 1Gbps.

1. Configure the speed of the interface:

```
[edit]
user@switch# set interfaces interface-name speed speed
```

For example, to configure a speed of 100Mbps on the **ge-0/1/0** interface:

```
[edit]
user@switch# set interfaces ge-0/1/0 speed 100m
```

2. To delete the speed of the interface:

```
[edit]
user@switch# delete interfaces interface-name speed speed
```

For example, to delete a speed of 100Mbps on the **ge-0/1/0** interface:

```
[edit]
user@switch# delete interfaces ge-0/1/0 speed 100m
```

Configuring the IP Options

To specify an IP address for the logical unit:

```
[edit]
user@switch# set interfaces interface-name unit logical-unit-number family inet address ip-address
```

Related Documentation

- [Monitoring Interface Status and Traffic on page 60](#)
- [show interfaces xe on page 285](#)
- [show interfaces ge-](#)
- [speed on page 148](#)

- [Understanding Interface Naming Conventions on page 5](#)
- [Interfaces Overview](#)

Configuring the Interface Address

You assign an address to an interface by specifying the address when configuring the protocol family. For the **inet** or **inet6** family, configure the interface IP address. For the **iso** family, configure one or more addresses for the loopback interface. For the **ccc**, **ethernet-switching**, **tcc**, **mpls**, **tnp**, and **vpls** families, you never configure an address.



NOTE: The point-to-point (PPP) address is taken from the loopback interface address that has the primary attribute. When the loopback interface is configured as an unnumbered interface, it takes the primary address from the donor interface.

To assign an address to an interface, include the **address** statement:

```
address address {
    broadcast address;
    destination address;
    destination-profile name;
    eui-64;
    preferred;
    primary;
}
```

You can include these statements at the following hierarchy levels:

- [edit interfaces *interface-name* unit *logical-unit-number* family *family*]
- [edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number* family *family*]

In the **address** statement, specify the network address of the interface.

For each address, you can optionally configure one or more of the following:

- Broadcast address for the interface subnet—Specify this in the **broadcast** statement; this applies only to Ethernet interfaces, such as the management interface **fxp0**, **em0**, or **me0** the Fast Ethernet interface, and the Gigabit Ethernet interface.
- Address of the remote side of the connection (for point-to-point interfaces only)—Specify this in the **destination** statement.
- PPP properties to the remote end—Specify this in the **destination-profile** statement. You define the profile at the [edit access group-profile *name* **ppp**] hierarchy level (for point-to-point interfaces only).
- Whether the router or switch automatically generates the host number portion of interface addresses—The **eui-64** statement applies only to interfaces that carry IPv6 traffic, in which the prefix length of the address is 64 bits or less, and the low-order 64

bits of the address are zero. This option does not apply to the loopback interface (**lo0**) because IPv6 addresses configured on the loopback interface must have a 128-bit prefix length.

- Whether this address is the preferred address—Each subnet on an interface has a preferred local address. If you configure more than one address on the same subnet, the preferred local address is chosen by default as the source address when you originate packets to destinations on the subnet.

By default, the preferred address is the lowest-numbered address on the subnet. To override the default and explicitly configure the preferred address, include the **preferred** statement when configuring the address.

- Whether this address is the primary address—Each interface has a primary local address. If an interface has more than one address, the primary local address is used by default as the source address when you send packets from an interface where the destination provides no information about the subnet (for example, some **ping** commands).

By default, the primary address on an interface is the lowest-numbered non-127 (in other words, non-loopback) preferred address on the interface. To override the default and explicitly configure the preferred address, include the **primary** statement when configuring the address.



NOTE: If you configure a duplicate IP address on an interface, even when the earlier interface with that IP address is disabled, a Warning message is added to the syslog and not displayed on the screen. Do not configure the same IP address of a disabled interface on another interface.

- [Configuring Interface IPv4 Addresses on page 46](#)
- [Configuring Interface IPv6 Addresses on page 49](#)

Configuring Interface IPv4 Addresses

You can configure router or switch interfaces with a 32-bit IP version 4 (IPv4) address and optionally with a destination prefix, sometimes called a *subnet mask*. An IPv4 address utilizes a 4-octet dotted decimal address syntax (for example, **192.16.1.1**). An IPv4 address with destination prefix utilizes a 4-octet dotted decimal address syntax with a destination prefix appended (for example, **192.16.1.1/30**).

To configure an IPv4 address on routers and switches running Junos OS, use the **edit interface *interface-name* unit *number* family inet address *a.b.c.d/nn*** statement at the **[edit interfaces]** hierarchy level.



NOTE: Juniper Networks routers and switches support /31 destination prefixes when used in point-to-point Ethernet configurations; however, they are not supported by many other devices, such as hosts, hubs, routers, or switches. You must determine if the peer system also supports /31 destination prefixes before configuration.

Operational Behavior of Interfaces When the Same IPv4 Address Is Assigned to Them

You can configure the same IPv4 address on multiple physical interfaces. When you assign the same IPv4 address to multiple physical interfaces, the operational behavior of those interfaces differs, depending on whether they are implicitly or explicitly point-to-point.



NOTE: By default, all interfaces are assumed to be point-to-point (PPP) interfaces. For all interfaces except aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet, you can explicitly configure an interface to be a point-to-point connection.



NOTE: If you configure the same IP address on multiple interfaces in the same routing instance, Junos OS uses only the first configuration. The remaining IP address configurations are ignored, leaving some interfaces without an assigned address. Interfaces without an assigned address cannot be used as a donor interface for an unnumbered Ethernet interface.

In the following example, the IP address configuration for interface xe-0/0/1.0 is ignored:

```
interfaces {
  xe-0/0/0 {
    unit 0 {
      family inet {
        address 192.168.1.1/24;
      }
    }
  }
  xe-0/0/1 {
    unit 0 {
      family inet {
        address 192.168.1.1/24;
      }
    }
  }
}
```

The following examples show the sample configuration of assigning the same IPv4 address to implicitly and explicitly point-to-point interfaces, and their corresponding **show interfaces terse** command outputs to see their operational status.

Configuring same IPv4 address on implicitly PPP interfaces:

```
[edit]
user@host# show
ge-0/1/0 {
  unit 0 {
    family inet {
      address 200.1.1.1/24;
```

```

    }
  }
}
ge-3/0/1 {
  unit 0 {
    family inet {
      address 200.1.1.1/24;
    }
  }
}
}

```

The sample output shown below for the above configuration reveals that only **ge-0/1/0.0** was assigned the same IPv4 address **200.1.1.1/24** and its **link** state was **up**, while **ge-3/0/1.0** was not assigned the IPv4 address, though its **link** state was **up**, which means that it will be operational only when it gets a unique IPv4 address other than **200.1.1.1/24**.

```
user@host> show interfaces terse ge*
```

Interface	Admin	Link	Proto	Local	Remote
ge-0/1/0		up	up		
ge-0/1/0.0		up	up	inet 200.1.1.1/24	
				multiservice	
ge-0/1/1		up	down		
ge-3/0/0		up	down		
ge-3/0/1		up	up		
ge-3/0/1.0		up	up	inet	
				multiservice	

Configuring same IPv4 address on explicitly PPP interfaces:

```

[edit]
user@host# show
so-0/0/0 {
  unit 0 {
    family inet {
      address 200.1.1.1/24;
    }
  }
}
so-0/0/3 {
  unit 0 {
    family inet {
      address 200.1.1.1/24;
    }
  }
}
}

```

The sample output shown below for the above configuration reveals that both **so-0/0/0.0** and **so-0/0/3.0** were assigned the same IPv4 address **200.1.1.1/24** and that their **link** states were **down**, which means that to make them operational at least one of them will have to be configured with a unique IPv4 address other than **200.1.1.1/24**.

```
user@host> show interfaces terse so*
```

Interface	Admin	Link	Proto	Local	Remote
so-0/0/0	up	up			
so-0/0/0.0	up	down	inet	200.1.1.1/24	
so-0/0/1	up	up			
so-0/0/2	up	down			

so-0/0/3	up	up	
so-0/0/3.0	up	down	inet 200.1.1.1/24
so-1/1/0	up	down	
so-1/1/1	up	down	
so-1/1/2	up	up	
so-1/1/3	up	up	
so-2/0/0	up	up	
so-2/0/1	up	up	
so-2/0/2	up	up	
so-2/0/3	up	down	

Configuring Interface IPv6 Addresses



NOTE: IPv6 is not currently supported for the QFX Series.

You represent IP version 6 (IPv6) addresses in hexadecimal notation using a colon-separated list of 16-bit values.

You assign a 128-bit IPv6 address to an interface by including the **address** statement:

```
address aaaa:bbbb:...:zzzz/nn;
```



NOTE: You cannot configure a subnet zero IPv6 address because RFC 2461 reserves the subnet-zero address for anycast addresses, and Junos OS complies with the RFC.

You can include this statement at the following hierarchy levels:

- [edit interfaces *interface-name* unit *logical-unit-number* family inet6]
- [edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number* family inet6]

The double colon (::) represents all bits set to 0, as shown in the following example:

```
interfaces fe-0/0/1 {
  unit 0 {
    family inet6 {
      address fec0:1:1::2/64;
    }
  }
}
```



NOTE: You must manually configure the router or switch advertisement and advertise the default prefix for autoconfiguration to work on a specific interface.

Related Documentation

- *Configuring IPCP Options*
- *Configuring Default, Primary, and Preferred Addresses and Interfaces*

Configuring an LPM Table With Junos OS Release 13.2X51-D10

In addition to choosing a profile, you can further optimize memory allocation for LPM table entries by configuring how many IPv6 addresses with prefixes in the range /65 through /127 you want to store. If you want to use more than 16 IPv6 addresses with prefixes in this range, you must enter and commit the following statement:

[edit]

```
user@switch# set chassis forwarding-options profile-name num-65-127-prefix value
```

in which *value* can be a value in the range 1 through 128. Each increment adds support for 16 IPv6 addresses with prefixes between /65 and /127, for a maximum of 2048 such addresses (16 x 128 = 2048). The system supports 16 of these addresses by default, so to increase the number of supported addresses, you must enter a value of 2 or greater. For example, if you enter **2**, the system will support 32 IPv6 addresses with prefixes in the range /65 through /127.



NOTE: When you configure the `num-65-127-prefix` value, all the data interfaces on the switch restart. The management interfaces are unaffected.

The LPM table is shared, and each increment that you add for IPv6 addresses with prefixes in the range /65 through /127 reduces the number of forwarding table entries that are available for IPv4 addresses and IPv6 addresses with prefixes less than /65.

[Table 13 on page 51](#) provides examples of valid combinations that the LPM table can store, also using the **l2-profile-one** profile. Once again, each row in the table represents a case in which the table is full and cannot accommodate any more entries.

Table 13: LPM Table Combinations Using l2-profile-one with Junos OS 1Release 3.2X51-D10

IPv4 entries	IPv6 Entries (prefix <= 64)	IPv6 Entries (prefix >= 65)	num-65-127-prefix
16K	0K	16	1 (default)
0K	8K	16	1 (default)
8K	4K	16	1 (default)
4K	4K	1K	64
2K	5K	1K	64
0K	6K	1K	64
4K	2K	2K	128
2K	3K	2K	128
0K	4K	2K	128

[Table 14 on page 52](#) provides examples of valid combinations that the LPM table can store when you use the **lpm-profile** profile. As before, each row represents a case in which the table is full and cannot accommodate any more entries.

Table 14: Example LPM Table Combinations Using lpm-profile With Junos OS 13.2X51-D10

IPv4 entries	IPv6 Entries (prefix <= 64)	IPv6 Entries (prefix >= 65)	num-65-127-prefix
128K	0K	16	1 (default)
0K	8K	16	1 (default)
8K	4K	16	1 (default)
4K	4K	1K	64
2K	5K	1K	64
0K	6K	1K	64
4K	2K	2K	128
2K	3K	2K	128
0K	4K	2K	128

**Related
Documentation**

- [Understanding the Unified Forwarding Table](#)
- [Configuring the Unified Forwarding Table](#)

Configuring the Port Type on QFX3600 Standalone Switches

The QFX3600 standalone switch provides 16 40-Gbps QSFP+ ports. By default, all 16 ports operate as 40-Gigabit Ethernet (xle) ports. Optionally, you can choose to configure the 40-Gbps ports to operate as four 10-Gigabit Ethernet (xe) ports. You can use QSFP+ to four SFP+ breakout cables or QSFP+ transceivers with fiber breakout cables to connect the 10-Gigabit Ethernet ports to other servers, storage, and switches. You can configure up to 64 10-Gigabit Ethernet ports on ports Q0 through Q15.

This topic explains how to configure the port type on QFX3600 standalone switches.



CAUTION: The Packet Forwarding Engine on the QFX3600 standalone switch is restarted when you commit the port type configuration changes. As a result, you might experience packet loss on the switch.

The following message may be displayed in the system log file when the Packet Forwarding Engine is restarted. You can ignore this message.

Pipe write error: Broken pipe

flush operation failed

The following steps describe how to configure either a block of ports or an individual port to operate as 10-Gigabit Ethernet (xe) ports, as well as how to delete a 10-Gigabit Ethernet (xe) port configuration.



NOTE: When you delete the xe port type configuration for an individual port or a block of ports, the ports return to operating as 40-Gigabit Ethernet (xle) ports.

1. To configure a block of ports to operate as 10-Gigabit Ethernet (xe) ports, specify a port range:

```
[edit chassis fpc 0 pic 0]
user@switch# set xe port-range port-range-low port-range-high
```

For example, to configure ports Q4 through Q7 to operate as 10-Gigabit Ethernet ports:

```
[edit chassis fpc 0 pic 0]
user@switch# set xe port-range 4 7
```

2. To configure an individual port to operate as a 10-Gigabit Ethernet (xe) port, specify a port number:

```
[edit chassis fpc 0 pic 0]
user@switch# set xe port port-number
```

For example, to configure port Q4 to operate as a 10-Gigabit Ethernet port:

```
[edit chassis fpc 0 pic 0]
user@switch# set xe port 4
```

3. Review your configuration and issue the **commit** command.

```
[edit chassis fpc 0 pic 0]
user@switch# commit
commit complete
```

4. To delete the 10-Gigabit Ethernet (xe) port configuration for a block of ports (and return to the default 40-Gigabit Ethernet configuration), specify a port range:

```
[edit chassis fpc 0 pic 0]
user@switch# delete xe port-range port-range-low port-range-high
```

For example, to delete the 10-Gigabit Ethernet port configuration for ports Q4 through Q7:

```
[edit chassis fpc 0 pic 0]
user@switch# delete xe port-range 4 7
```

5. To delete the 10-Gigabit Ethernet (xe) port configuration for an individual port (and return to the default 40-Gigabit Ethernet configuration), specify a port number:

```
[edit chassis fpc 0 pic 0]
user@switch# delete xe port port-number
```

For example, to delete the 10-Gigabit Ethernet port configuration for port Q4:

```
[edit chassis fpc 0 pic 0]
user@switch# delete xe port 4
```

- Related Documentation**
- [Understanding Interface Naming Conventions on page 5](#)
 - [pic on page 176](#)

Configuring the QSFP+ Port Type on QFX3500 Standalone Switches

By default, the four 40-Gbps QSFP+ ports are configured to operate as 10-Gigabit Ethernet (xe) ports. You can use QSFP+ to four SFP+ breakout cables or QSFP+ transceivers with fiber breakout cables to connect the 10-Gigabit Ethernet ports to other servers, storage, and switches. You can, however, configure the four 40-Gbps QSFP+ ports to operate as 40-Gigabit Ethernet (xle) ports.



NOTE: Port Q0 supports only three (not the typical four) 10-Gigabit Ethernet ports, because one port is reserved.



CAUTION: The Packet Forwarding Engine on the QFX3500 standalone switch is restarted when you commit port type configuration changes (for example, configuring or deleting an xle port). As a result, you might experience packet loss on the device.

The following steps describe how to configure either a block of ports or an individual port to operate as 40-Gigabit Ethernet (xle) ports, as well as how to delete a 40-Gigabit Ethernet (xle) configuration.



NOTE: When you delete an xle block of ports or individual port, the ports return to operating as 10-Gigabit Ethernet ports.

1. To configure a block of ports to operate as 40-Gigabit Ethernet (xle) ports, specify a port range:

```
[edit chassis fpc 0 pic 2]  
user@switch# set xle port-range port-range-low port-range-high
```

For example, to configure ports Q0 through Q3 to operate as 40-Gigabit Ethernet ports:

```
[edit chassis fpc 0 pic 2]  
user@switch# set xle port-range 0 3
```

2. To configure an individual port to operate as a 40-Gigabit Ethernet (xle) port, specify a port number:

```
[edit chassis fpc 0 pic 2]  
user@switch# set xle port port-number
```

For example, to configure port Q2 to operate as a 40-Gigabit Ethernet port:

```
[edit chassis fpc 0 pic 2]  
user@switch# set xle port 2
```

3. Review your configuration and issue the **commit** command.

```
[edit]
user@switch# commit
commit complete
```

4. To delete a block of ports configured as 40-Gigabit Ethernet (xle) ports (and return to the default 10-Gigabit Ethernet configuration), specify a port range:

```
[edit chassis fpc 0 pic 2]
user@switch# delete xle port-range port-range-low port-range-high
```

For example, to delete the 40-Gigabit Ethernet (xle) port configuration for ports Q0 through Q3 (and return to the default 10-Gigabit Ethernet configuration):

```
[edit chassis fpc 0 pic 2]
user@switch# delete xle port-range 0 3
```

5. To delete an individual port configured as a 40-Gigabit Ethernet (xle) port (and return to the default 10-Gigabit Ethernet configuration), specify an individual port:

```
[edit chassis fpc 0 pic 2]
user@switch# delete xle port port-number
```

For example, to delete the 40-Gigabit Ethernet (xle) port configuration for port Q2 (and return to the default 10-Gigabit Ethernet configuration):

```
[edit chassis fpc 0 pic 2]
user@switch# delete xle port 2
```

6. Review your configuration and issue the **commit** command.

```
[edit]
user@switch# commit
commit complete
```

**Related
Documentation**

- [Understanding Interface Naming Conventions on page 5](#)
- [pic on page 176](#)

Configuring the QSFP+ Port Type on QFX5100 Devices

You can convert default 40-Gigabit Ethernet data plane uplink interfaces (fte) to 40-Gigabit Ethernet access interfaces (xle) ports, and default 40-Gigabit Ethernet interfaces (xle) to 40-Gigabit Ethernet data plane uplink interfaces (fte). Ports Q0 and Q1 are fixed fte ports and cannot be changed. Ports Q2 and Q3 are fte ports by default but can be changed to xle ports. Ports Q4 and Q5 are xle ports by default but can be changed to fte ports.



NOTE: You must configure xle ports in pairs, not individually, otherwise functionality is not guaranteed.



CAUTION: The Packet Forwarding Engine on a QFX5100 switch is restarted when you commit port type configuration changes (for example, configuring or deleting an fte or xle port). As a result, you might experience packet loss on the device.

The following steps describe how to configure either a block of ports or an individual port, as well as how to delete these configurations.

1. To configure a block of ports to operate as 40-Gigabit Ethernet interfaces (xle), specify a port range:

```
[edit chassis node-group name node-device name pic 1]
user@switch# set xle port-range port-range-low port-range-high
```

For example, to configure ports Q4 through Q5 to operate as 40-Gigabit Ethernet interfaces (xle):

```
[edit chassis node-group name node-device name pic 1]
user@switch# set xle port-range 4 5
```

2. To configure a block of ports to operate as 40-Gigabit Ethernet data plane uplink interfaces (fte), specify a port range:

```
[edit chassis node-group name node-device name pic 1]
user@switch# set fte port-range port-range-low port-range-high
```

For example, to configure ports Q4 through Q5 to operate as 40-Gigabit Ethernet data plane uplink interfaces (fte):

```
[edit chassis node-group name node-device name pic 1]
user@switch# set fte port-range 4 5
```

3. To configure an individual port to operate as a 40-Gigabit Ethernet data plane uplink interfaces (fte), specify a port number:

```
[edit chassis node-group name node-device name pic 1]
user@switch# set fte port port-number
```


For example, to configure port Q4 to operate as a 40-Gigabit Ethernet data plane uplink interfaces (fte):

```
[edit chassis node-group name node-device name pic 1]
user@switch# set fte port 4
```

4. Review your configuration and issue the **commit** command.

```
[edit]
user@switch# commit
commit complete
```

5. To delete a block of ports configured as 40-Gigabit Ethernet (xle) ports, specify a port range:

```
[edit chassis node-group name node-device name pic 1]
user@switch# delete xle port-range port-range-low port-range-high
```

For example, to delete the 40-Gigabit Ethernet access interface (xle) port configuration for ports Q2 through Q3:

```
[edit chassis node-group name node-device name pic 1]
user@switch# delete xle port-range 2 3
```

6. To delete an individual port configured as a 40-Gigabit Ethernet (xle) interface:

```
[edit chassis node-group name node-device name pic 1]
user@switch# delete xle port port-number
```

For example, to delete the 40-Gigabit Ethernet interface (xle) for port Q2:

```
[edit chassis node-group name node-device name pic 1]
user@switch# delete xle port 2
```

7. To delete a block of ports configured as 40-Gigabit Ethernet data plane uplink interfaces (fte), specify a port range:

```
[edit chassis node-group name node-device name pic 1]
user@switch# delete fte port-range port-range-low port-range-high
```

For example, to delete the block of ports configured as 40-Gigabit Ethernet data plane uplink interfaces (fte) for ports Q4 through Q5:

```
[edit chassis node-group name node-device name pic 1]
user@switch# delete fte port-range 4 5
```

8. To delete an individual port configured as a 40-Gigabit Ethernet data plane uplink interfaces (fte):

```
[edit chassis node-group name node-device name pic 1]
user@switch# delete fte port port-number
```

For example, to delete the 40-Gigabit Ethernet data plane uplink interfaces (fte) for port Q4:

```
[edit chassis node-group name node-device name pic 1]
user@switch# delete fte port 4
```

9. Review your configuration and issue the **commit** command.

```
[edit]
user@switch# commit
commit complete
```

- Related Documentation**
- [Understanding Interface Naming Conventions on page 5](#)
 - [Understanding Port Ranges and System Modes on page 13](#)
 - [pic on page 176](#)

Configuring the System Mode

You can configure different system modes to achieve varying levels of port density on the QFX5100-24Q and QFX5100-96S switches. Depending on the system mode you configure, there are restrictions on which ports you can channelize. If you channelize ports that are restricted, the configuration is ignored. By default, all QSFP+ interfaces are auto-channelized. Auto-channelization is not supported on interfaces contained in expansion modules or on Virtual Chassis ports. To disable auto-channelization, see “[Channelizing Interfaces](#)” on [page 39](#) for more information.



NOTE: When you request the system mode change, you must reboot for the system mode to take effect.



CAUTION: The Packet Forwarding Engine on the switch is restarted when you issue system mode changes. As a result, you might experience packet loss on the switch.

The following system modes are available on the QFX5100-24Q switch:

- Default-mode
- Mode-104-port
- Flexi-PIC mode
- Non-oversubscribed mode

The following system modes are available on the QFX5100-96S switch:

- Default-mode
- Non-oversubscribed mode

See [Table 15 on page 58](#) for more information regarding the supported system modes for your switch.

Table 15: System Modes Supported on QFX5100 Switches Running Enhanced Layer 2 Software

	Default-mode	Mode-104port	Flexi-pic-mode	Non-oversubscribed-mode
QFX5100-48S	Not supported	Not supported	Not supported	Not supported

Table 15: System Modes Supported on QFX5100 Switches Running Enhanced Layer 2 Software (*continued*)

	Default-mode	Mode-104port	Flexi-pic-mode	Non-oversubscribed-mode
QFX5100-24Q	<p>Supported</p> <p>You do not need to configure the switch to be in this mode. On PIC 0, you can channelize all 24 40-Gbps QSFP+ ports. On PIC 1 and PIC 2, the 40-Gbps QSFP+ ports in the expansion modules are supported but cannot be channelized. In this mode, you can have one of two port combinations: 32 40-Gbps QSFP+ ports, or 96 10-Gigabit Ethernet ports plus 8 40-Gbps QSFP+ ports.</p>	<p>Supported</p> <p>On PIC 0, all 24 40-Gbps QSFP+ ports are channelized by default, which provides 96 10-Gigabit Ethernet ports. 40-Gbps QSFP+ ports contained in an expansion module on PIC 1 are supported. On PIC 1, ports 0 and 2 are channelized by default, and ports 1 and 3 are disabled. If 40-Gbps QSFP+ ports contained in an expansion module are detected on PIC 2, they are ignored.</p>	<p>Supported</p> <p>On PIC 0, the first four ports (ports 0 through 3) cannot be channelized. 40-Gbps QSFP+ ports contained in expansion modules on PIC 1 and PIC 2 are supported but cannot be channelized.</p>	<p>Supported</p> <p>All 24 40-Gbps QSFP+ ports on PIC 0 can be channelized to 96 10-Gigabit Ethernet ports. 40-Gbps QSFP+ ports contained in the expansion modules on PIC 1 and PIC 2 are not supported and cannot be channelized. There is no packet loss for packets of any size in this mode.</p>
QFX5100-96S	<p>Supported</p> <p>You do not need to configure the switch to be in this mode. On PIC 0, all 96 10-Gigabit Ethernet ports are supported. You can only channelize the 40-Gbps QSFP+ interfaces to 10-Gigabit Ethernet interfaces on ports 96 and 100. When you channelize the interfaces on ports 96 and 100, ports 97, 98, 99, 101, 102 and 103 are disabled.</p>	<p>Not supported</p>	<p>Not supported</p>	<p>Supported</p> <p>On PIC 0, all 96 10-Gigabit Ethernet ports are supported. However, the eight 40-Gbps QSFP+ ports are not supported and cannot be channelized. There is no packet loss for packets of any size in this mode.</p>

The following steps describe how to change the system mode.

1. To change the system mode, issue the following operational command:

```
{master:0}
root> request chassis system-mode mode
```

For example:

```
{master:0}
root> request chassis system-mode non-oversubscribed-mode
```

2. To return to the default mode (default-mode), issue the following operational command:

```
{master:0}
```

```
root> request chassis system-mode default-mode
```

- To see which system mode is configured, issue the following operational command:

```
{master:0}
root> show chassis system-mode
```

Related Documentation

- [Understanding Interface Naming Conventions on page 5](#)
- [Understanding Port Ranges and System Modes on page 13](#)
- [Channelizing Interfaces on page 39](#)

Monitoring Interface Status and Traffic

Purpose View interface status to monitor interface bandwidth utilization and traffic statistics.

- Action**
- To view interface status for all the interfaces, enter [show interfaces xe](#).
 - To view status and statistics for a specific interface, enter [show interfaces xe interface-name](#).
 - To view status and traffic statistics for all interfaces, enter either [show interfaces xe detail](#) or [show interfaces xe extensive](#).

Meaning For details about output from the CLI commands, see [show interfaces xe](#).

Monitoring System Process Information

Purpose View the processes running on the device.

- Action** To view the software processes running on the device:
- ```
[edit system]

user@switch> show system processes
```

**Meaning** [Table 16 on page 60](#) summarizes the output fields in the system process information display.

The display includes the total CPU load and total memory utilization.

**Table 16: Summary of System Process Information Output Fields**

| Field    | Values                                                   |
|----------|----------------------------------------------------------|
| PID      | Identifier of the process.                               |
| Name     | Owner of the process.                                    |
| State    | Current state of the process.                            |
| CPU Load | Percentage of the CPU that is being used by the process. |

Table 16: Summary of System Process Information Output Fields (*continued*)

| Field              | Values                                              |
|--------------------|-----------------------------------------------------|
| Memory Utilization | Amount of memory that is being used by the process. |
| Start Time         | Time of day when the process started.               |

- Related Documentation**
- [Monitoring System Properties on page 61](#)
  - *show system uptime*

## Monitoring System Properties

**Purpose** View system properties such as the name, IP address, and resource usage.

**Action** To monitor system properties in the CLI, enter the following commands:

- *show system uptime*
- *show system users*
- *show system storage*

**Meaning** [Table 17 on page 61](#) summarizes key output fields in the system properties display.

Table 17: Summary of Key System Properties Output Fields

| Field                      | Values                                                                                                  | Additional Information                                 |
|----------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>General Information</b> |                                                                                                         |                                                        |
| Serial Number              | Serial number of device.                                                                                |                                                        |
| Junos OS Version           | Version of Junos OS active on the switch, including whether the software is for domestic or export use. | Export software is for use outside the USA and Canada. |
| Hostname                   | Name of the device.                                                                                     |                                                        |
| IP Address                 | IP address of the device.                                                                               |                                                        |
| Loopback Address           | Loopback address.                                                                                       |                                                        |
| Domain Name Server         | Address of the domain name server.                                                                      |                                                        |
| Time Zone                  | Time zone on the device.                                                                                |                                                        |
| <b>Time</b>                |                                                                                                         |                                                        |
| Current Time               | Current system time, in Coordinated Universal Time (UTC).                                               |                                                        |

Table 17: Summary of Key System Properties Output Fields (*continued*)

| Field                          | Values                                                                                                                                       | Additional Information                                                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| System Booted Time             | Date and time when the device was last booted and how long it has been running.                                                              |                                                                                  |
| Protocol Started Time          | Date and time when the protocols were last started and how long they have been running.                                                      |                                                                                  |
| Last Configured Time           | Date and time when a configuration was last committed. This field also shows the name of the user who issued the last <b>commit</b> command. |                                                                                  |
| Load Average                   | CPU load average for 1, 5, and 15 minutes.                                                                                                   |                                                                                  |
| <b>Storage Media</b>           |                                                                                                                                              |                                                                                  |
| Internal Flash Memory          | Usage details of internal flash memory.                                                                                                      |                                                                                  |
| External Flash Memory          | Usage details of external USB flash memory.                                                                                                  |                                                                                  |
| <b>Logged in Users Details</b> |                                                                                                                                              |                                                                                  |
| User                           | Username of any user logged in to the switch.                                                                                                |                                                                                  |
| Terminal                       | Terminal through which the user is logged in.                                                                                                |                                                                                  |
| From                           | System from which the user has logged in. A hyphen indicates that the user is logged in through the console.                                 |                                                                                  |
| Login Time                     | Time when the user logged in.                                                                                                                | This is the <b>user@switch</b> field in <b>show system users</b> command output. |
| Idle Time                      | How long the user has been idle.                                                                                                             |                                                                                  |

- Related Documentation**
- [Monitoring System Process Information on page 60](#)
  - *show system processes*

## Troubleshooting Network Interfaces

### The interface on the port in which an SFP or SFP+ transceiver is installed in an SFP or SFP+ module is down

- Problem Description:** The switch has an SFP or SFP+ module installed. The interface on the port in which an SFP or SFP+ transceiver is installed is down.

**Symptoms:** When you check the status with the CLI command **show interfaces *interface-name*** , the disabled port is not listed.

**Cause** By default, the SFP or SFP+ module operates in the 10-Gigabit Ethernet mode and supports only SFP or SFP+ transceivers. The operating mode for the module is incorrectly set.

**Solution** Only SFP or SFP+ transceivers can be installed in SFP or SFP+ modules. You must configure the operating mode of the SFP or SFP+ module to match the type of transceiver you want to use. For SFP+ transceivers, configure 10-Gigabit Ethernet operating mode.





## PART 2

# Layer 3 Logical Interfaces

- [Understanding Layer 3 Logical Interfaces on page 67](#)



## CHAPTER 2

# Understanding Layer 3 Logical Interfaces

- [Understanding Layer 3 Logical Interfaces on page 67](#)
- [Configuring a Layer 3 Logical Interface on page 68](#)
- [Verifying That Layer 3 Logical Interfaces Are Working on page 68](#)

## Understanding Layer 3 Logical Interfaces

---

A Layer 3 logical interface is a logical division of a physical interface that operates at the network level and therefore can receive and forward 802.1Q VLAN tags. You can use Layer 3 logical interfaces to route traffic among multiple VLANs along a single trunk line that connects a Juniper Networks switch to a Layer 2 switch. Only one physical connection is required between the switches. .



**NOTE:** You can also use Layer 3 logical interfaces to provide alternative gateway addresses for smart DHCP relay

To create Layer 3 logical interfaces on a switch, enable VLAN tagging, partition the physical interface into logical partitions, and bind the VLAN ID to the logical interface.

We recommend that you use the VLAN ID as the logical interface number when you configure the logical interface. QFX Series and EX4600 switches support a maximum of 4089 VLANs, which includes the default VLAN. You can, however, assign a VLAN ID in the range of 1 to 4094, but five of these VLAN IDs are reserved for internal use.

VLAN tagging places the VLAN ID in the frame header, allowing each physical interface to handle multiple VLANs. When you configure multiple VLANs on an interface, you must also enable tagging on that interface. Junos OS on switches supports a subset of the 802.1Q standard for receiving and forwarding routed or bridged Ethernet frames with single VLAN tags and running Virtual Router Redundancy Protocol (VRRP) over 802.1Q-tagged interfaces.

### Related Documentation

- [Interfaces Overview on page 3](#)
- [Configuring a Layer 3 Logical Interface on page 68](#)
- *Configuring DHCP and BOOTP Relay*
- *Junos OS Network Interfaces Library for Routing Devices*

## Configuring a Layer 3 Logical Interface

Devices use Layer 3 logical interfaces to divide a physical interface into multiple logical interfaces, each corresponding to a VLAN. Layer 3 logical interfaces route traffic between subnets.

To configure Layer 3 logical interfaces, enable VLAN tagging and partition one or more physical ports into multiple logical interfaces, each corresponding to a VLAN ID.

Before you begin, make sure you set up your VLANs. See *Configuring VLANs*.

To configure Layer 3 logical interfaces:

1. Enable VLAN tagging:

```
[edit interfaces interface-name]
user@switch# set vlan-tagging
```

2. Bind each VLAN ID to a logical interface:

```
[edit interfaces interface-name]
user@switch# set unit logical-unit-number vlan-id vlan-id-number
```

### Related Documentation

- [Understanding Layer 3 Logical Interfaces on page 67](#)
- [Verifying That Layer 3 Logical Interfaces Are Working on page 68](#)

## Verifying That Layer 3 Logical Interfaces Are Working

**Purpose** After configuring Layer 3 logical interfaces, verify that they are set up properly and transmitting data.

- Action**
1. To determine if you have successfully created the logical interfaces and the links are up:

```
[edit interfaces]
user@switch> show interfaces interface-name terse
```

| Interface      | Admin | Link | Proto | Local      | Remote |
|----------------|-------|------|-------|------------|--------|
| ge-0/0/0       | up    | up   |       |            |        |
| ge-0/0/0.0     | up    | up   | inet  | 1.1.1.1/24 |        |
| ge-0/0/0.1     | up    | up   | inet  | 2.1.1.1/24 |        |
| ge-0/0/0.2     | up    | up   | inet  | 3.1.1.1/24 |        |
| ge-0/0/0.3     | up    | up   | inet  | 4.1.1.1/24 |        |
| ge-0/0/0.4     | up    | up   | inet  | 5.1.1.1/24 |        |
| ge-0/0/0.32767 | up    | up   |       |            |        |

2. Use the **ping** command from a device on one subnet to an address on another subnet to determine if packets were transmitted correctly on the logical interface VLANs:

```
user@switch> ping ip-address
PING 1.1.1.1 (1.1.1.1): 56 data bytes
64 bytes from 1.1.1.1: icmp_seq=0 ttl=64 time=0.157 ms
64 bytes from 1.1.1.1: icmp_seq=1 ttl=64 time=0.238 ms
64 bytes from 1.1.1.1: icmp_seq=2 ttl=64 time=0.255 ms
64 bytes from 1.1.1.1: icmp_seq=3 ttl=64 time=0.128 ms
--- 1.1.1.1 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
```

**Meaning** The output confirms that the logical interfaces have been created and the links are up.

**Related Documentation**

- [Configuring a Layer 3 Logical Interface on page 68](#)



## PART 3

# Link Aggregation Groups (LAGs) and Link Aggregation Control Protocol (LACP)

- [Understanding LAGs and LACP on page 73](#)





## CHAPTER 3

# Understanding LAGs and LACP

- Understanding Aggregated Ethernet Interfaces and LACP on page 73
- Configuring Aggregated Ethernet LACP on page 76
- Configuring Link Aggregation on page 77
- Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79
- Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch on page 84
- Verifying That LACP Is Configured Correctly and Bundle Members Are Exchanging LACP Protocol Packets on page 88
- Verifying the Status of a LAG Interface on page 89
- Troubleshooting an Aggregated Ethernet Interface on page 89

## Understanding Aggregated Ethernet Interfaces and LACP

---

IEEE 802.3ad link aggregation enables you to group Ethernet interfaces to form a single, aggregated Ethernet interface, also known as a *link aggregation group (LAG)* or *bundle*.

Link aggregation is used to aggregate Ethernet interfaces between two devices. You can create a LAG between a Juniper Networks device and a router, switch, aggregation switch, server, or other devices. The aggregated Ethernet interfaces that participate in a LAG are called member links. Because a LAG is composed of multiple member links, even if one member link fails, the LAG continues to carry traffic over the remaining links.



**NOTE:** On QFX5100 and EX4600 standalone switches and on a QFX5100 Virtual Chassis and EX4600 Virtual Chassis, you can configure a mixed rate of link speeds for the aggregated Ethernet bundle. Only link speeds of 40G and 10G are supported. Load balancing will not work if you configure link speeds that are not supported.

Link Aggregation Control Protocol (LACP) is a subcomponent of the IEEE 802.3ad standard and is used as a discovery protocol.



**NOTE:** To ensure load balancing across the aggregated Ethernet (AE) interfaces on a redundant server Node group, the members of the AE must be equally distributed across the redundant server Node group.



**NOTE:** During a network Node group switchover, traffic might be dropped for a few seconds.

- [Link Aggregation Group on page 74](#)
- [Link Aggregation Control Protocol \(LACP\) on page 75](#)

## Link Aggregation Group

To create a LAG:

1. Create a logical aggregated Ethernet interface.
2. Define the parameters associated with the logical aggregated Ethernet interface, such as a logical unit, interface properties, and Link Aggregation Control Protocol (LACP).
3. Define the member links to be contained within the aggregated Ethernet interface—for example, two 10-Gigabit Ethernet interfaces.
4. Configure LACP for link detection.

Keep in mind these hardware and software guidelines:

- Up to 32 Ethernet interfaces can be grouped to form a LAG on a redundant server Node group, a server Node group, and a network Node group on a QFabric system. Up to 48 LAGs are supported on redundant server Node groups and server Node groups on a QFabric system, and up to 128 LAGs are supported on network Node groups on a QFabric system. You can configure LAGs across Node devices in redundant server Node groups, server Node groups, and network Node groups.



**NOTE:** If you try to commit a configuration containing more than 32 Ethernet interfaces in a LAG, you will receive an error message saying that the group limit of 32 has been exceeded, and the configuration checkout has failed.

- Up to 64 Ethernet interfaces can be grouped to form a LAG, and up to 448 LAGs are supported on QFX3500, QFX3600, EX4600, and OCX Series switches, and up to 1,000 LAGs are supported on QFX5100 switches.



**NOTE:** If you try to commit a configuration containing more than 64 Ethernet interfaces in a LAG, you will receive an error message saying that the group limit of 64 has been exceeded, and the configuration checkout has failed.

- The LAG must be configured on both sides of the link.
- The interfaces on either side of the link must be set to the same speed and be in full-duplex mode.



**NOTE:** On a QFX5100 and EX4600 standalone switch or QFX5100 Virtual Chassis and EX4600 Virtual Chassis, you can configure mixed rate aggregated Ethernet bundles (LAGs with different link speeds). OCX Series switches do not support LAGs with different speeds.



**NOTE:** Junos OS assigns a unique ID and port priority to each port. The ID and priority are not configurable.

- QFabric systems support a special LAG called an FCoE LAG, which enables you to transport FCoE traffic and regular Ethernet traffic (traffic that is not FCoE traffic) across the same link aggregation bundle. Standard LAGs use a hashing algorithm to determine which physical link in the LAG is used for a transmission, so communication between two devices might use different physical links in the LAG for different transmissions. An FCoE LAG ensures that FCoE traffic uses the same physical link in the LAG for requests and replies in order to preserve the virtual point-to-point link between the FCoE device converged network adapter (CNA) and the FC SAN switch across a QFabric system Node device. An FCoE LAG does not provide load balancing or link redundancy for FCoE traffic. However, regular Ethernet traffic uses the standard hashing algorithm and receives the usual LAG benefits of load balancing and link redundancy in an FCoE LAG. See *Understanding FCoE LAGs* for more information.

## Link Aggregation Control Protocol (LACP)

LACP is one method of bundling several physical interfaces to form one logical aggregated Ethernet interface. The LACP mode can be active or passive. The transmitting link is known as the *actor*, and the receiving link is known as the *partner*. If the actor and partner are both in passive mode, they do not exchange LACP packets, and the aggregated Ethernet links do not come up. If either the actor or partner is active, they do exchange LACP packets. By default, LACP is in passive mode on aggregated Ethernet interfaces. To initiate transmission of LACP packets and response to LACP packets, you must enable LACP active mode. You can configure Ethernet links to actively transmit protocol data units (PDUs), or you can configure the links to passively transmit them, sending out LACP PDUs only when they receive them from another link. You can configure both VLAN-tagged and untagged aggregated Ethernet interfaces without LACP enabled. LACP is defined in IEEE 802.3ad, *Aggregation of Multiple Link Segments*.

LACP was designed to achieve the following:

- Automatic addition and deletion of individual links to the LAG without user intervention.
- Link monitoring to check whether both ends of the bundle are connected to the correct group.

When a dual-homed server is deployed with a switch, the network interface cards form a LAG with the switch. During a server upgrade, the server may not be able to exchange LACP PDUs. In such a situation you can configure an interface to be in the **up** state even if no PDUs are exchanged. Use the **force-up** statement to configure an interface when the peer has limited LACP capability. The interface selects the associated LAG by default, whether the switch and peer are both in active or passive mode. When there are no received PDUs, the partner is considered to be working in the passive mode. Therefore, LACP PDU transmissions are controlled by the transmitting link.

If the remote end of the LAG link is a security device, LACP might not be supported because security devices require a deterministic configuration. In this case, do not configure LACP. All links in the LAG are permanently operational unless the switch detects a link failure within the Ethernet physical layer or data link layers.

**Related  
Documentation**

- [Configuring Link Aggregation on page 77](#)
- [Configuring an FCoE LAG](#)
- [Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79](#)
- [Example: Configuring an FCoE LAG on a Redundant Server Node Group](#)
- [Verifying the Status of a LAG Interface on page 89](#)
- [Junos OS Network Interfaces Library for Routing Devices](#)

---

## Configuring Aggregated Ethernet LACP

---

For aggregated Ethernet interfaces, you can configure the Link Aggregation Control Protocol (LACP). LACP is one method of bundling several physical interfaces to form one logical interface. You can configure aggregated Ethernet with or without LACP enabled.

Before you configure LACP, be sure you have configured the aggregated Ethernet bundles—also known as link aggregation groups (LAGs).

When LACP is enabled, the local and remote sides of the aggregated Ethernet links exchange protocol data units (PDUs), containing information about the state of the link. You can configure Ethernet links to actively transmit PDUs, or you can configure the links to passively transmit them, sending out LACP PDUs only when they receive them from another link. One side of the link must be configured as **active** for the link to be up.



**NOTE:** Do not add LACP to a LAG if the remote end of the LAG link is a security device, unless the security device supports LACP. Security devices often do not support LACP because they require a deterministic configuration.

To configure LACP:

1. Enable the LACP mode:

```
[edit interfaces]
user@switch# set aex aggregated-ether-options larp mode
```

For example, to specify the mode as active, execute the following command:

```
[edit interfaces]
user@switch# set aex aggregated-ether-options larp active
```

2. Specify the interval and speed at which the interfaces send LACP packets:

```
[edit interfaces]
user@switch# set aex aggregated-ether-options larp periodic interval
```

For example, to specify the interval as fast, execute the following command:

```
[edit interfaces]
user@switch# set aex aggregated-ether-options larp periodic fast
```

## Configuring Link Aggregation

Use the link aggregation feature to aggregate one or more links to form a virtual link or aggregation group. The MAC client can treat this virtual link as if it were a single link. Link aggregation increases bandwidth, provides graceful degradation as failure occurs, and increases link availability.



**NOTE:** An interface with an already configured IP address cannot form part of the aggregation group.



**NOTE:** On QFX5100 and EX4600 standalone switches and on QFX5100 Virtual Chassis and EX4600 Virtual Chassis, you can configure a mixed rate of link speeds for the aggregated Ethernet bundle. Only link speeds of 40G and 10G are supported. Load balancing will not work if you configure link speeds that are not supported.

1. [Creating an Aggregated Ethernet Interface on page 77](#)
2. [Configuring the VLAN Name and VLAN ID Number on page 78](#)
3. [Configuring Aggregated Ethernet LACP on page 78](#)

## Creating an Aggregated Ethernet Interface

To create an aggregated Ethernet interface:

1. Specify the number of aggregated Ethernet interfaces to be created:

```
[edit chassis]
user@switch# set aggregated-devices interfaces device-count device-count
```

For example, to specify 5:

```
[edit chassis]
user@switch# set aggregated-devices interfaces device-count
```

2. Specify the minimum number of links for the aggregated Ethernet interface (aex), that is, the defined bundle, to be labeled “up”:



**NOTE:** By default only one link must be up for the bundle to be labeled “up”.

```
[edit interfaces]
user@switch# set interface-name aggregated-ether-options minimum-links minimum-links
For example, to specify 5:
```

```
[edit interfaces]
user@switch# set interface-name aggregated-ether-options minimum-links 5
```

3. Specify the link speed for the aggregated Ethernet bundle:

```
[edit interfaces]
user@switch# set interface-name aggregated-ether-options link-speed link-speed
For example, to specify 10g:
```

```
[edit interfaces]
user@switch# set interface-name aggregated-ether-options link-speed 10g
```

4. Specify the members to be included within the aggregated Ethernet bundle:

```
[edit interfaces]
user@switch# set interface-name ether-options 802.3ad aex
user@switch# set interface-name ether-options 802.3ad aex
```

## Configuring the VLAN Name and VLAN ID Number



**NOTE:** VLANs are not supported on OCX Series switches.

```
[edit vlans]
user@switch# set vlan-name vlan-id vlan-id-number
For example, 100.
```

## Configuring Aggregated Ethernet LACP

For aggregated Ethernet interfaces, you can configure the Link Aggregation Control Protocol (LACP). LACP is one method of bundling several physical interfaces to form one logical interface. You can configure aggregated Ethernet with or without LACP enabled.

Before you configure LACP, be sure you have configured the aggregated Ethernet bundles—also known as link aggregation groups (LAGs).

When LACP is enabled, the local and remote sides of the aggregated Ethernet links exchange protocol data units (PDUs), containing information about the state of the link. You can configure Ethernet links to actively transmit PDUs, or you can configure the links to passively transmit them, sending out LACP PDUs only when they receive them from another link. One side of the link must be configured as **active** for the link to be up.



**NOTE:** Do not add LACP to a LAG if the remote end of the LAG link is a security device, unless the security device supports LACP. Security devices often do not support LACP because they require a deterministic configuration.

To configure LACP:

1. Enable the LACP mode:

```
[edit interfaces]
user@switch# set aex aggregated-ether-options lacp mode
```

For example, to specify the mode as active, execute the following command:

```
[edit interfaces]
user@switch# set aex aggregated-ether-options lacp active
```

2. Specify the interval and speed at which the interfaces send LACP packets:

```
[edit interfaces]
user@switch# set aex aggregated-ether-options lacp periodic interval
```

For example, to specify the interval as fast, execute the following command:

```
[edit interfaces]
user@switch# set aex aggregated-ether-options lacp periodic fast
```

#### Related Documentation

- [Understanding Interface Naming Conventions on page 5](#)
- [Understanding Interface Naming Conventions](#)
- [Configuring an FCoE LAG](#)
- [Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79](#)
- [Verifying the Status of a LAG Interface on page 89](#)
- [Verifying That LACP Is Configured Correctly and Bundle Members Are Exchanging LACP Protocol Packets on page 88](#)
- [show lacp statistics interfaces \(View\) on page 389](#)

## Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch

A QFX Series product allows you to combine multiple Ethernet links into one logical interface for higher bandwidth and redundancy. The ports that are combined in this manner are referred to as a link aggregation group (LAG) or bundle. The number of Ethernet links you can combine into a LAG depends on your QFX Series product model. You can configure LAGs to connect a QFX Series product to other switches, like aggregation switches, servers, or routers. This example describes how to configure LAGs to connect a QFX3500, QFX3600, or QFX5100 switch to an aggregation switch.

- [Requirements on page 79](#)
- [Overview and Topology on page 80](#)
- [Configuration on page 80](#)
- [Verification on page 83](#)
- [Troubleshooting on page 83](#)

### Requirements

This example uses the following software and hardware components:

- Junos OS Release 11.1 or later for the QFX3500 and QFX3600 switches, and Junos OS 13.2 or later for the QFX5100 switch.
- One QFX3500, QFX3600, or QFX5100 switch.

Overview and Topology

In this example, the switch has one LAG comprising two 10-Gigabit Ethernet interfaces. This LAG is configured in port mode trunk so that the switch and the VLAN to which it has been assigned can send and receive traffic.

Configuring the Ethernet interfaces as LAGs has the following advantages:

- If one physical port is lost for any reason (a cable is unplugged or a switch port fails), the logical port transparently continues to function over the remaining physical port.
- Link Aggregation Control Protocol (LACP) can optionally be configured for link monitoring and automatic addition and deletion of individual links without user intervention.



**NOTE:** If the remote end of the LAG link is a security device, LACP might not be supported because security devices require a deterministic configuration. In this case, do not configure LACP. All links in the LAG are permanently operational unless the switch detects a link failure within the Ethernet physical layer or data link layers.

The topology used in this example consists of one switch with a LAG configured between two of its 10-Gigabit Ethernet interfaces. The switch is connected to an aggregation switch.

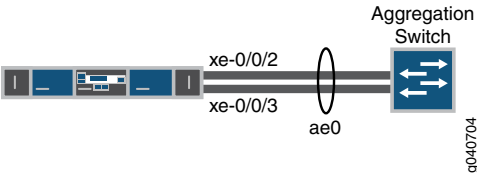


Table 18 on page 80 details the topology used in this configuration example.

Table 18: Components of the Topology for Configuring a LAG Between a QFX3500 Switch and Aggregation Switch

| Hostname | Base Hardware                       | Trunk Port                                                                                               |
|----------|-------------------------------------|----------------------------------------------------------------------------------------------------------|
| switch   | QFX3500, QFX3600, or QFX5100 switch | ae0 is configured as a trunk port and combines the following two interfaces:<br>xe-0/0/2 and<br>xe-0/0/3 |

Configuration

To configure a LAG between two 10-Gigabit Ethernet interfaces:



**CLI Quick Configuration** To quickly configure a LAG between two 10-Gigabit Ethernet interfaces on a switch, copy the following commands and paste them into the switch terminal window:



**NOTE:** If you are configuring a LAG on the QFX5100 switch, use the **interface-mode** statement instead of the **port-mode** statement. For ELS details, see *Getting Started with Enhanced Layer 2 Software*.

```
[edit]
set chassis aggregated-devices ethernet device-count 1
set interfaces ae0 aggregated-ether-options minimum-links 1
set interfaces ae0 aggregated-ether-options link-speed 10g
set interfaces ae0 unit 0 family ethernet-switching vlan members green
set interfaces xe-0/0/2 ether-options 802.ad ae0
set interfaces xe-0/0/3 ether-options 802.ad ae0
set interfaces ae0 unit 0 family ethernet-switching port-mode trunk
set interfaces ae0 aggregated-ether-options lacp active
set interfaces ae0 aggregated-ether-options lacp periodic fast
```

**Step-by-Step Procedure** To configure a LAG between a QFX Series switch and an aggregation switch:

1. Specify the number of LAGs to be created on the switch:  

```
[edit chassis]
user@switch# set aggregated-devices ethernet device-count 1
```
2. Specify the number of links that need to be present for the **ae0** LAG interface to be up:  

```
[edit interfaces]
user@switch# set ae0 aggregated-ether-options minimum-links 1
```
3. Specify the media speed of the **ae0** link:  

```
[edit interfaces]
user@switch# set ae0 aggregated-ether-options link-speed 10g
```
4. Specify the members to be included within the aggregated Ethernet bundle:  

```
[edit interfaces]
user@switch# set interfaces xe-0/0/2 ether-options 802.ad ae0
[edit interfaces]
user@switch# set interfaces xe-0/0/3 ether-options 802.ad ae0
```
5. Assign a port mode of trunk to the **ae0** link:



**NOTE:** If you are configuring a LAG on the QFX5100 switch, use the **interface-mode** statement instead of the **port-mode** statement. For ELS details, see *Getting Started with Enhanced Layer 2 Software*.

- ```
[edit interfaces]
user@switch# set ae0 unit 0 family ethernet-switching port-mode trunk
or
[edit interfaces]
user@switch# set ae0 unit 0 family ethernet-switching interface-mode trunk
```
6. Assign the LAG to a VLAN:

- ```
[edit interfaces]
user@switch# set ae0 unit 0 family ethernet-switching vlan members green vlan-id 200
```
7. (Optional): Designate one side of the LAG as active for LACP:
- ```
[edit interfaces]
user@switch# set ae0 aggregated-ether-options lacp active
```
8. (Optional): Designate the interval and speed at which the interfaces send LACP packets:
- ```
[edit interfaces]
user@switch# set ae0 aggregated-ether-options lacp periodic fast
```

---

## Results

Display the results of the configuration on a QFX3500 or QFX3600 switch:

```
[edit]
chassis {
 aggregated-devices {
 ethernet {
 device-count 1;
 }
 }
}
green {
 vlan-id 200;
}
}
interfaces {
 ae0 {
 aggregated-ether-options {
 link-speed 10g;
 minimum-links 1;
 }
 unit 0 {
 family ethernet-switching {
 port-mode trunk;
 vlan {
 members green;
 }
 }
 }
 }
 xe-0/0/2 {
 ether-options {
 802.ad ae0;
 }
 }
 xe-0/0/3 {
 ether-options {
 802.ad ae0;
 }
 }
}
```

## Verification

To verify that switching is operational and one LAG has been created, perform these tasks:

- [Verifying That LAG ae0.0 Has Been Created on page 83](#)
- [Verifying That LAG ae0 Has Been Created on page 83](#)

### Verifying That LAG ae0.0 Has Been Created

**Purpose** Verify that LAG **ae0.0** has been created on the switch.

**Action** **show interfaces ae0 terse**

| Interface | Admin | Link | Proto      | Local | Remote |
|-----------|-------|------|------------|-------|--------|
| ae0       | up    | up   |            |       |        |
| ae0.0     | up    | up   | eth-switch |       |        |

**Meaning** The output confirms that the **ae0.0** link is up and shows the **family** and IP address assigned to this link.

### Verifying That LAG ae0 Has Been Created

**Purpose** Verify that LAG **ae0** has been created on the switch

**Action** **show interfaces ae0 terse**

| Interface | Admin | Link | Proto      | Local | Remote |
|-----------|-------|------|------------|-------|--------|
| ae0       | up    | down |            |       |        |
| ae0.0     | up    | down | eth-switch |       |        |

**Meaning** The output shows that the **ae0.0** link is down.

## Troubleshooting

### Troubleshooting a LAG That Is Down

**Problem** The **show interfaces terse** command shows that the LAG is **down**.

**Solution** Check the following:

- Verify that there is no configuration mismatch.
- Verify that all member ports are up.
- Verify that a LAG is part of family ethernet switching (Layer 2 LAG) or family inet (Layer 3 LAG).
- Verify that the LAG member is connected to the correct LAG at the other end.

**Related Documentation**

- [Configuring Link Aggregation on page 77](#)
- [Verifying the Status of a LAG Interface on page 89](#)

- [Verifying That LACP Is Configured Correctly and Bundle Members Are Exchanging LACP Protocol Packets on page 88](#)
- [Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch on page 84](#)
- [Example: Configuring an FCoE LAG on a Redundant Server Node Group](#)
- [show lacp statistics interfaces \(View\) on page 389](#)

## Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch

---

QFX Series products allow you to combine multiple Ethernet links into one logical interface for higher bandwidth and redundancy. The ports that are combined in this manner are referred to as a link aggregation group (LAG) or bundle. The number of Ethernet links you can combine into a LAG depends on your QFX Series product model. On a standalone switch, you can group up to 32 Ethernet interfaces to form a LAG. On a QFabric system, you can group up to 8 Ethernet interfaces to form a LAG. QFX Series products allow you to further enhance these links by configuring Link Aggregation Control Protocol (LACP).

This example describes how to overlay LACP on the LAG configurations that were created in [“Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch” on page 79](#):

- [Requirements on page 84](#)
- [Overview and Topology on page 84](#)
- [Configuring LACP for the LAG on the QFX Series on page 85](#)
- [Verification on page 85](#)
- [Troubleshooting on page 87](#)

### Requirements

This example uses the following software and hardware components:

- Junos OS Release 11.1 or later for the QFX3500 switch, Junos OS Release 12.1 or later for the QFX3600 switch, and Junos OS 13.2 or later for the QFX5100 switch.
- One QFX3500, QFX3600, or QFX5100 switch.

Before you configure LACP, be sure you have:

- Configured the ports on the switches as trunk ports.
- Configured the LAG.

### Overview and Topology

The topology in this example is exactly the same as the topology used in the [Configuring a LAG Between a QFX Switch and an Aggregation Switch](#) example. This example shows how to use LACP to enhance the LAG functionality.

LACP exchanges are made between *actors* (the transmitting link) and *partners* (the receiving link). The LACP mode can be either active or passive.



**NOTE:** If the actor and partner are both in passive mode, they do not exchange LACP packets, which results in the aggregated Ethernet links not coming up. By default, LACP is in passive mode. To initiate transmission of LACP packets and responses to LACP packets, you must enable LACP in active mode.

By default, the actor and partner send LACP packets every second. You can configure the interval at which the interfaces send LACP packets by including the **periodic** statement at the **[edit interfaces *interface-name* aggregated-ether-options lacp]** hierarchy level.

The interval can be fast (every second) or slow (every 30 seconds).

## Configuring LACP for the LAG on the QFX Series

To configure LACP for a QFX Series LAG, perform these tasks:

**CLI Quick Configuration** To quickly configure LACP for the access switch LAGs, copy the following commands and paste them into the switch terminal window:

```
[edit]
set interfaces ae0 aggregated-ether-options lacp active periodic fast
```

**Step-by-Step Procedure** To configure LACP for LAG ae0 :

1. Specify the aggregated Ethernet options for the LAG:

```
[edit interfaces]
user@switch# set ae0 aggregated-ether-options lacp active periodic fast
```

**Results** Display the results of the configuration:

```
[edit interfaces]
user@switch# show
ae0 {
 aggregated-ether-options {
 lacp {
 active;
 periodic fast;
 }
 }
}
```

## Verification

To verify that LACP packets are being exchanged, perform the following tasks:

- [Verifying the LACP Settings on page 85](#)
- [Verifying That the LACP Packets Are Being Exchanged on page 86](#)

### Verifying the LACP Settings

**Purpose** Verify that LACP has been set up correctly.

**Action** Use the `show lacp interfaces interface-name` command to check that LACP has been enabled as active on one end.

```
user@switch> show lacp interfaces xe-0/0/2
```

Aggregated interface: ae0

|                |               |     |     |                |     |     |      |           |          |
|----------------|---------------|-----|-----|----------------|-----|-----|------|-----------|----------|
| LACP state:    | Role          | Exp | Def | Dist           | CoI | Syn | Aggr | Timeout   | Activity |
| xe-0/0/2       | Actor         | No  | Yes | No             | No  | No  | Yes  | Fast      | Active   |
| xe-0/0/2       | Partner       | No  | Yes | No             | No  | No  | Yes  | Fast      | Passive  |
| LACP protocol: | Receive State |     |     | Transmit State |     |     |      | Mux State |          |
| xe-0/0/2       | Defaulted     |     |     | Fast periodic  |     |     |      | Detached  |          |

**Meaning** The output indicates that LACP has been set up correctly and is active at one end.

### Verifying That the LACP Packets Are Being Exchanged

**Purpose** Verify that LACP packets are being exchanged.

**Action** Use the `show interfaces aex statistics` command to display LACP information.

```
user@switch> show interfaces ae0 statistics
```

Physical interface: ae0, Enabled, Physical link is Down  
 Interface index: 153, SNMP ifIndex: 30  
 Link-level type: Ethernet, MTU: 1514, Speed: Unspecified, Loopback: Disabled,  
 Source filtering: Disabled, Flow control: Disabled, Minimum links needed: 1,  
 Minimum bandwidth needed: 0  
 Device flags : Present Running  
 Interface flags: Hardware-Down SNMP-Traps Internal: 0x0  
 Current address: 02:19:e2:50:45:e0, Hardware address: 02:19:e2:50:45:e0  
 Last flapped : Never  
 Statistics last cleared: Never  
 Input packets : 0  
 Output packets: 0  
 Input errors: 0, Output errors: 0

Logical interface ae0.0 (Index 71) (SNMP ifIndex 34)  
 Flags: Hardware-Down Device-Down SNMP-Traps Encapsulation: ENET2  

|            |         |     |       |     |
|------------|---------|-----|-------|-----|
| Statistics | Packets | pps | Bytes | bps |
| Bundle:    |         |     |       |     |
| Input :    | 0       | 0   | 0     | 0   |
| Output:    | 0       | 0   | 0     | 0   |

 Protocol inet  
 Flags: None  
 Addresses, Flags: Dest-route-down Is-Preferred Is-Primary  
 Destination: 10.10.10/24, Local: 10.10.10.1, Broadcast: 10.10.10.255

**Meaning** The output here shows that the link is down and that no PDUs are being exchanged.

## Troubleshooting

To troubleshoot a nonworking LACP link, perform these tasks:

- [Troubleshooting a Nonworking LACP Link on page 87](#)

---

### Troubleshooting a Nonworking LACP Link

---

**Problem** The LACP link is not working.

**Solution** Check the following:

- Remove the LACP configuration and verify whether the static LAG is up.
- Verify that LACP is configured at both ends.
- Verify that LACP is not passive at both ends.
- Verify whether LACP protocol data units (PDUs) are being exchanged by running the **monitor traffic-interface lag-member detail** command.

- Related Documentation**
- [Configuring Link Aggregation on page 77](#)
  - [Verifying the Status of a LAG Interface on page 89](#)
  - [Verifying That LACP Is Configured Correctly and Bundle Members Are Exchanging LACP Protocol Packets on page 88](#)
  - [Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79](#)
  - [Example: Configuring an FCoE LAG on a Redundant Server Node Group](#)
  - [show lacp statistics interfaces \(View\) on page 389](#)

## Verifying That LACP Is Configured Correctly and Bundle Members Are Exchanging LACP Protocol Packets

Verify that LACP has been set up correctly and that the bundle members are transmitting LACP protocol packets.

1. [Verifying the LACP Setup on page 88](#)
2. [Verifying That LACP Packets Are Being Exchanged on page 88](#)

### Verifying the LACP Setup

**Purpose** Verify that the LACP has been set up correctly.

**Action** To verify that LACP has been enabled as active on one end:

```
user@switch>show lacp interfaces xe-0/0/0
Aggregated interface: ae0
LACP state:
xe-0/1/0 Role Exp Def Dist Col Syn Aggr Timeout Activity
xe-0/1/0 Actor No Yes No No No Yes Fast Active
xe-0/1/0 PartnerNo Yes No No No Yes Fast Passive
LACP protocol: Receive State Transmit State Mux State
xe-0/1/0 Defaulted Fast periodic Detached
```

**Meaning** This example shows that LACP has been configured with one side as active and the other as passive. When LACP is enabled, one side must be set as active in order for the bundled link to be up.

### Verifying That LACP Packets Are Being Exchanged

**Purpose** Verify that LACP packets are being exchanged between interfaces.

**Action** Use the `show lacp statistics interfaces interface-name` command to display LACP BPDU exchange information.

```
show lacp statistics interfaces ae0
Aggregated interface: ae0
LACP Statistics:
xe-0/0/2 LACP Rx LACP Tx Unknown Rx Illegal Rx
xe-0/0/3 1352 2035 0 0
xe-0/0/3 1352 2056 0 0
```

**Meaning** The output here shows that the link is up and that PDUs are being exchanged.

- Related Documentation**
- [Configuring Link Aggregation on page 77](#)
  - [Verifying the Status of a LAG Interface on page 89](#)
  - [Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79](#)
  - [Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch on page 84](#)
  - [show lacp statistics interfaces \(View\) on page 389](#)



## Verifying the Status of a LAG Interface

**Purpose** Verify that a link aggregation group (LAG) (**ae0**) has been created on the switch.

**Action** To verify that the **ae0** LAG has been created:

```
[edit interfaces]
show interfaces ae0 terse
```

| Interface | Admin | Link | Proto | Local         | Remote |
|-----------|-------|------|-------|---------------|--------|
| ae0       | up    | up   |       |               |        |
| ae0.0     | up    | up   | inet  | 10.10.10.2/24 |        |

**Meaning** The output confirms that the **ae0** link is up and shows the family and IP address assigned to this link.

- Related Documentation**
- [Configuring Link Aggregation on page 77](#)
  - [Verifying That LACP Is Configured Correctly and Bundle Members Are Exchanging LACP Protocol Packets on page 88](#)
  - [Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79](#)
  - [Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch on page 84](#)
  - [show lacp statistics interfaces \(View\) on page 389](#)

## Troubleshooting an Aggregated Ethernet Interface

**Problem** **Description:** The **show interfaces terse** command shows that the LAG is down.

**Solution** Check the following:

- Verify that there is no configuration mismatch.
- Verify that all member ports are up.
- Verify that a LAG is part of family ethernet-switching (Layer 2 LAG) or family inet (Layer 3 LAG).



**NOTE:** Layer 2 LAGs are not supported on OCX Series switches.

- Verify that the LAG member is connected to the correct LAG at the other end.
- Verify that the LAG members belong to the same switch.

- Related Documentation**
- [Verifying the Status of a LAG Interface on page 89](#)
  - [Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79](#)

## PART 4

# Configuration Statements and Operational Commands

- [Interfaces Configuration Statements on page 93](#)
- [IP Directed Broadcast Configuration Statement on page 181](#)
- [LAGs and LACP Configuration Statements on page 183](#)
- [Interfaces Operational Commands on page 193](#)
- [LAGs and LACP Operational Commands on page 383](#)



## CHAPTER 4

# Interfaces Configuration Statements

- [address](#) on page 96
- [alarm \(chassis\)](#) on page 99
- [auto-negotiation](#) on page 100
- [channel-speed](#) on page 101
- [configured-flow-control](#) on page 102
- [craft-lockout](#) on page 103
- [description \(Interfaces\)](#) on page 104
- [ethernet \(Alarm\)](#) on page 105
- [ethernet-switching](#) on page 106
- [ether-options](#) on page 107
- [eui-64](#) on page 108
- [family](#) on page 109
- [fibre-channel \(Alarm\)](#) on page 113
- [filter](#) on page 114
- [flow-control](#) on page 116
- [fpc](#) on page 117
- [gratuitous-arp-reply](#) on page 118
- [hold-time \(Physical Interface\)](#) on page 119
- [irb \(Interfaces\)](#) on page 121
- [inet \(interfaces\)](#) on page 124
- [inet6 \(interfaces\)](#) on page 125
- [interface-mode](#) on page 126
- [interface-range](#) on page 128
- [interfaces](#) on page 130
- [link-down](#) on page 137
- [link-mode](#) on page 138
- [link-speed](#) on page 139
- [loopback \(Aggregated Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet\)](#) on page 140

- [management-ethernet \(Alarm\) on page 140](#)
- [member on page 141](#)
- [member-range on page 142](#)
- [mtu on page 143](#)
- [no-gratuitous-arp-request on page 144](#)
- [pic on page 145](#)
- [rx-buffers on page 146](#)
- [source on page 147](#)
- [speed on page 148](#)
- [targeted-broadcast on page 149](#)
- [traceoptions \(Individual Interfaces\) on page 150](#)
- [tx-buffers on page 151](#)
- [unit on page 153](#)
- [vlan-id on page 154](#)
- [vlan-tagging on page 155](#)
- [alarm \(chassis\) on page 156](#)
- [chassis on page 157](#)
- [chassis \(QFabric System\) on page 159](#)
- [container-devices on page 161](#)
- [craft-lockout on page 162](#)
- [description \(Interfaces\) on page 163](#)
- [device-count on page 164](#)
- [disk-failure-action on page 164](#)
- [ethernet on page 165](#)
- [ethernet \(Alarm\) on page 165](#)
- [ethernet-switching on page 166](#)
- [ether-options on page 167](#)
- [eui-64 on page 168](#)
- [fpc on page 169](#)
- [fpc \(Interconnect Device\) on page 170](#)
- [fte \(Port\) on page 171](#)
- [interconnect-device \(Chassis\) on page 172](#)
- [node-device \(Chassis\) on page 173](#)
- [node-group \(Chassis\) on page 174](#)
- [on-disk-failure on page 175](#)
- [pic on page 176](#)
- [port-mode on page 177](#)

- [routing-engine on page 178](#)
- [xe \(Port\) on page 179](#)
- [xle \(Port\) on page 180](#)

## address

```

Syntax address address {
 arp ip-address (mac | multicast-mac) mac-address <publish>;
 broadcast address;
 destination address;
 destination-profile name;
 eui-64;
 master-only;
 multipoint-destination address dlcid dlcid-identifier;
 multipoint-destination address {
 epd-threshold cells;
 inverse-arp;
 oam-liveness {
 up-count cells;
 down-count cells;
 }
 oam-period (disable | seconds);
 shaping {
 (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate burst
 length);
 queue-length number;
 }
 vci vpi-identifier.vci-identifier;
 }
 primary;
 preferred;
 (vrrp-group | vrrp-inet6-group) group-number {
 (accept-data | no-accept-data);
 advertise-interval seconds;
 authentication-type authentication;
 authentication-key key;
 fast-interval milliseconds;
 (preempt | no-preempt) {
 hold-time seconds;
 }
 priority-number number;
 track {
 priority-cost seconds;
 priority-hold-time interface-name {
 interface priority;
 bandwidth-threshold bits-per-second {
 priority;
 }
 }
 }
 route ip-address/mask routing-instance instance-name priority-cost cost;
 }
 virtual-address [addresses];
 }
}

```

**Hierarchy Level** [edit interfaces *interface-name* unit *logical-unit-number* family *family*],  
 [edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number*  
 family *family*]



**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Configure the interface address.

**Options** *address*—Address of the interface.

- In Junos OS Release 13.3 and later, when you configure an IPv6 host address and an IPv6 subnet address on an interface, the commit operation fails.
- In releases earlier than Junos OS Release 13.3, when you use the same configuration on an interface, the commit operation succeeds, but only one of the IPv6 addresses that was entered is assigned to the interface. The other address is not applied.



**NOTE:** If you configure the same address on multiple interfaces in the same routing instance, Junos OS uses only the first configuration, the remaining address configurations are ignored and can leave interfaces without an address. Interfaces that do not have an assigned address cannot be used as a donor interface for an unnumbered Ethernet interface.

For example, in the following configuration the address configuration of interface xe-0/0/1.0 is ignored:

```
interfaces {
 xe-0/0/0 {
 unit 0 {
 family inet {
 address 192.168.1.1/24;
 }
 }
 }
 xe-0/0/1 {
 unit 0 {
 family inet {
 address 192.168.1.1/24;
 }
 }
 }
}
```

For more information on configuring the same address on multiple interfaces, see [“Configuring the Interface Address” on page 45](#).

The remaining statements are explained separately.



**NOTE:** The `edit logical-systems` hierarchy is not available on QFabric systems.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.


- Related Documentation**
- *Configuring the Protocol Family*
  - *Junos OS Administration Library for Routing Devices*
  - *family*
  - *negotiate-address*
  - *unnumbered-address (Ethernet)*

## alarm (chassis)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>alarm {     interface-type {         alarm-name (ignore   red   yellow);     } }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | [edit chassis],<br>[edit chassis interconnect-device <i>name</i> ],<br>[edit chassis node-group <i>name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 12.2 for the ACX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | <p>Configure the chassis alarms and whether they trigger a red or yellow alarm, or whether they are ignored. Red alarm conditions light the <b>RED ALARM</b> LED on either the router's craft interface or the switch's LCD screen and trigger an audible alarm if one is connected to the contact on the craft interface or LCD screen. Yellow alarm conditions light the <b>YELLOW ALARM</b> LED on either the router's craft interface or the switch's LCD screen and trigger an audible alarm if one is connected to the craft interface or LCD screen.</p> <p>To configure more than one alarm, include multiple <i>alarm-name</i> lines.</p> |
| <b>Options</b>                  | <p><i>alarm-name</i>—Alarm condition. For a list of conditions, see <i>System-Wide Alarms and Alarms for Each Interface Type</i>.</p> <p><i>ignore</i>—The specified alarm condition does not set off any alarm.</p> <p><i>interface-type</i>—Type of interface on which you are configuring the alarm: <b>atm</b>, <b>ethernet</b>, <b>sonet</b>, or <b>t3</b>.</p> <p><b>red</b>—The specified alarm condition sets off a red alarm.</p> <p><b>yellow</b>—The specified alarm condition sets off a yellow alarm.</p>                                                                                                                             |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Understanding Alarms</i></li> <li>• <i>Chassis Conditions That Trigger Alarms</i></li> <li>• <i>Chassis Alarm Messages on a QFX3500 Device</i></li> <li>• <i>Interface Alarm Messages</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |

## auto-negotiation

---

|                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                              | (auto-negotiation   no-auto-negotiation);                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>                                                                                                                                                     | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">ether-options</a> ]                                                                                                                                                                                                                                           |
| <b>Release Information</b>                                                                                                                                                 | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                                                                                                |
| <b>Description</b>                                                                                                                                                         | <p>Explicitly enable or disable autonegotiation.</p> <ul style="list-style-type: none"><li>• <b>auto-negotiation</b>—Enable autonegotiation.</li><li>• <b>no-auto-negotiation</b>—Disable autonegotiation. When autonegotiation is disabled, you must explicitly configure link mode and speed options.</li></ul>                |
| <b>Default</b>                                                                                                                                                             | Autonegotiation is automatically enabled for Gigabit Ethernet interfaces. Autonegotiation is not an option for 10-Gigabit Ethernet interfaces. No explicit action is taken after the autonegotiation is complete or if the negotiation fails.                                                                                    |
| <hr/> <div> <b>NOTE:</b> Autonegotiation is not supported on QFX5100 devices.</div> <hr/> |                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b>                                                                                                                                            | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                          |
| <b>Related Documentation</b>                                                                                                                                               | <ul style="list-style-type: none"><li>• <a href="#">speed on page 148</a></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul> |


## channel-speed

---

|                                 |                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>channel-speed (10g disable-auto-speed-detection) ;</code>                                                                                                                                                                |
| <b>Hierarchy Level</b>          | <code>[edit chassis fpc slot-number pic pic-number (port port-number   port-range port-range-low port-range-high)]</code>                                                                                                      |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 13.2 for the QFX Series.                                                                                                                                                              |
| <b>Description</b>              | (QFX3500, QFX3600, and QFX5100 standalone switches running Enhanced Layer 2 Software only)—Enable the specified port on the PIC to perform in the specified channel speed. Additionally, you can disable auto-speed detection. |
| <b>Default</b>                  | <b>40g</b> (40-Gigabit Ethernet).                                                                                                                                                                                              |
| <b>Options</b>                  | <b>10g</b> —Set the channel speed to 10g (10-Gigabit Ethernet).<br><br><b>disable-auto-speed-detection</b> —Disable auto-speed detection.                                                                                      |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Channelizing Interfaces on page 39</a></li> </ul>                                                                                                                         |

## configured-flow-control

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>configured-flow-control {<br/>    rx-buffers (on   off);<br/>    tx-buffers (on   off);<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">ether-options</a> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.1 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | <p>Configure Ethernet PAUSE asymmetric flow control on an interface. You can set an interface to generate and send PAUSE messages, and you can set an interface to respond to PAUSE messages sent by the connected peer. You must set both the <b>rx-buffers</b> and the <b>tx-buffers</b> values when you configure asymmetric flow control.</p> <p>Use the <b>flow-control</b> and <b>no-flow-control</b> statements to enable and disable symmetric PAUSE on an interface. Symmetric flow control and asymmetric flow control are mutually exclusive features. If you attempt to configure both, the switch returns a commit error.</p> <div><b>NOTE:</b> Ethernet PAUSE temporarily stops transmitting all traffic on a link when the buffers fill to a certain threshold. To temporarily pause traffic on individual “lanes” of traffic (each lane contains the traffic associated with a particular IEEE 802.1p code point, so there can be eight lanes of traffic on a link), use priority-based flow control (PFC) by applying a congestion notification profile to the interface.</div> <p>Ethernet PAUSE and PFC are mutually exclusive features, so you cannot configure both of them on the same interface. If you attempt to configure both Ethernet PAUSE and PFC on an interface, the switch returns a commit error.</p> |
| <b>Default</b>                  | Flow control is disabled. You must explicitly configure Ethernet PAUSE flow control on interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | The statements are explained separately.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">congestion-notification-profile</a></li><li>• <a href="#">flow-control on page 116</a></li><li>• <i>Configuring CoS Asymmetric Ethernet PAUSE Flow Control</i></li><li>• <i>Enabling and Disabling CoS Symmetric Ethernet PAUSE Flow Control</i></li><li>• <i>Understanding CoS Flow Control (Ethernet PAUSE and PFC)</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## craft-lockout

```
Syntax craft-lockout {
 alarm {
 interface-type {
 link-down (red | yellow | ignore);
 }
 }
 container-devices {
 device-count number;
 }
 fpc slot {
 pic pic-number {
 fibre-channel {
 port-range {
 port-range-low port-range-high;
 }
 }
 }
 }
 routing-engine {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 }
 }
```

**Hierarchy Level** [edit [chassis interconnect-device](#)]

**Release Information** Statement introduced in Junos Release 11.3 for the QFX Series.

**Description** Disable the physical operation of the craft interface front panel.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- *Configuring the Junos OS to Disable the Physical Operation of the Craft Interface*

## description (Interfaces)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>description text;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>          | <code>[edit <a href="#">interfaces</a> interface-name]</code> ,<br><code>[edit <a href="#">interfaces</a> interface-name unit logical-unit-number]</code> ,<br><code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | <p>Provide a textual description of the interface or the logical unit. Any descriptive text you include is displayed in the output of the <b>show interfaces</b> commands, and is also exposed in the <b>ifAlias</b> Management Information Base (MIB) object. It has no effect on the operation of the interface on the router or switch.</p> <p>The textual description can also be included in the extended DHCP relay option 82 Agent Circuit ID suboption.</p>                                                                                                                                                                                                                                           |
| <b>Options</b>                  | <b>text</b> —Text to describe the interface. If the text includes spaces, enclose the entire text in quotation marks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Required Privilege Level</b> | <b>interface</b> —To view this statement in the configuration.<br><b>interface-control</b> —To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring Interface Description</i></li><li>• <i>Adding a Logical Unit Description to the Configuration</i></li><li>• <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i></li><li>• <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i></li><li>• <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <i>Using DHCP Relay Agent Option 82 Information</i></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li><li>• <i>Example: Connecting Access Switches to a Distribution Switch</i></li></ul> |



---

## ethernet (Alarm)

---

|                                 |                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | ethernet {<br>link-down (red   yellow   ignore);<br>}                                                                                         |
| <b>Hierarchy Level</b>          | [edit chassis alarm],<br>[edit chassis interconnect-device name alarm],<br>[edit chassis node-group name alarm]                               |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series. |
| <b>Description</b>              | Configure alarms for an Ethernet interface.                                                                                                   |
| <b>Options</b>                  | The remaining statement is explained separately.—                                                                                             |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Understanding Alarms</i></li><li>• <i>Interface Alarm Messages</i></li></ul>                       |

## ethernet-switching

---

**Syntax** ethernet-switching {  
    filter {  
        group *filter-group-number*;  
        input *filter-name*;  
        input-list [ *filter-names* ];  
        output *filter-name*;  
        output-list [ *filter-names* ];  
    }  
    **interface-mode** (access | trunk);  
    recovery-timeout *seconds*;  
    storm-control *profile-name*;  
    vlan {  
        members (*vlan-name* | [*-vlan-names*] | all);  
    }  
}

**Hierarchy Level** [edit **interfaces** *ge-chassis/slot/port unit logical-unit-number*] family

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.

**Description** Configure Ethernet switching protocol family information for the logical interface.  
  
The remaining statements are explained separately.

**Default** You must configure a logical interface to be able to use the physical device.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)
- [JUNOS Software Network Interfaces Configuration Guide](#)

## ether-options

**Syntax** The **auto-negotiation** and **speed** statements are not supported on the OCX Series.

```
ether-options {
 802.3ad aex {
 lacp {
 force-up;
 (primary | backup);
 }
 }
 (auto-negotiation | no-auto-negotiation);
 configured-flow-control {
 rx-buffers (on | off);
 tx-buffers (on | off);
 }
 ethernet-switch-profile
 storm-control storm-control-profile;
}
(flow-control | no-flow-control);
link-mode mode;
(loopback | no-loopback);
speed (auto-negotiation | no-auto-negotiation);
}
```

**Hierarchy Level** [edit [interfaces](#) *interface-name*]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Configure **ether-options** properties for a Gigabit Ethernet or 10-Gigabit Ethernet interface.



**NOTE:** The **auto-negotiation** and **speed** statements are not supported on the OCX Series.

The statements are explained separately.

**Default** Enabled.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)
- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces](#)
- [Junos OS Network Interfaces Library for Routing Devices](#)

## eui-64

---

|                                 |                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | eui-64;                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> unit <i>number</i> family inet6 address <i>address</i> ]                                                                                                                                                                            |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.3 for EX Series switches.<br>Statement introduced in Junos OS Release 12.2 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series. |
| <b>Description</b>              | For interfaces that carry IP version 6 (IPv6) traffic, automatically generate the host number portion of interface addresses.                                                                                                                                              |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring the Interface Address on page 45</a></li></ul>                                                                                                                                                             |

## family

**Syntax** The **ethernet-switching** statement and all of its substatements are not supported on OCX Series switches.

```
family {
 ethernet-switching {
 filter {
 group filter-group-number;
 input filter-name;
 input-list [filter-names];
 output filter-name;
 output-list [filter-names];
 }
 interface-mode (access | trunk);
 recovery-timeout seconds;
 storm-control profile-name;
 vlan {
 members (vlan-name [-vlan-names] | all);
 }
 }
 inet {
 accounting {
 destination-class-usage;
 source-class-usage {
 input;
 output;
 }
 }
 }
 address ipv4-address {
 arp ip-address (mac | multicast-mac) mac-address <publish>;
 broadcast address;
 preferred;
 primary;
 vrrp-group group-number {
 (accept-data | no-accept-data);
 advertise-interval seconds;
 advertisements-threshold number;
 authentication-key key;
 authentication-type authentication;
 fast-interval milliseconds;
 (preempt | no-preempt) {
 hold-time seconds;
 }
 priority number;
 track {
 interface interface-name {
 priority-cost number;
 }
 priority-hold-time seconds;
 route ip-address/mask routing-instance instance-name priority-cost cost;
 }
 virtual-address [addresses];
 vrrp-inherit-from {
```

```

 active-group group-number;
 active-interface interface-name;
 }
}
filter {
 group filter-group-number;
 input filter-name;
 input-list [filter-names];
 output filter-name;
 output-list [filter-names];
}
mtu bytes;
no-neighbor-learn;
no-redirects;
primary;
rpf-check {
 fail-filter filter-name;
 mode {
 loose;
 }
}
}
inet6 {
 accounting {
 destination-class-usage;
 source-class-usage {
 input;
 output;
 }
 }
}
address address {
 eui-64;
 ndp ip-address (mac | multicast-mac) mac-address <publish>;
 preferred;
 primary;
 vrrp-inet6-group group-id {
 accept-data | no-accept-data;
 advertisements-threshold number;
 authentication-key key;
 authentication-type authentication;
 fast-interval milliseconds;
 inet6-advertise-interval milliseconds;
 preempt | no-preempt {
 hold-time seconds;
 }
 priority number;
 track {
 interface interface-name {
 priority-cost number;
 }
 priority-hold-time seconds;
 route ip-address/mask routing-instance instance-name priority-cost cost;
 }
 }
 virtual-inet6-address [addresses];
 virtual-link-local-address ipv6-address;
}

```

```

 vrrp-inherit-from {
 active-group group-name;
 active-interface interface-name;
 }
 }
 (dad-disable | no-dad-disable);
 filter {
 group filter-group-number;
 input filter-name;
 input-list [filter-names];
 output filter-name;
 output-list [filter-names];
 }
 mtu bytes;
 nd6-stale-time time;
 no-neighbor-learn;
 no-redirects;
 policer {
 input policer-name;
 output policer-name;
 }
 rpf-check {
 fail-filter filter-name;
 mode {
 loose;
 }
 }
 }
 mpls {
 filter {
 group filter-group-number;
 input filter-name;
 input-list [filter-names];
 output filter-name;
 output-list [filter-names];
 }
 mtu bytes;
 }
}

```

|                            |                                                                                                                                                                                                                                                             |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hierarchy Level</b>     | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">unit</a> <i>logical-unit-number</i> ],<br>[edit <a href="#">interfaces</a> <a href="#">interface-range</a> <i>interface-name</i> <a href="#">unit</a> <i>logical-unit-number</i> family] |
| <b>Release Information</b> | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                               |
| <b>Description</b>         | Configure protocol family information for the logical interface on the QFX Series and OCX Series product.                                                                                                                                                   |

**Default**

**NOTE:** The **ethernet-switching** statement and all of its substatements are not supported on OCX Series switches.

Access interfaces on the QFX Series are set to **family ethernet-switching** by default. If you are going to change the family setting for an interface, you might have to delete this default setting or any user-configured family setting first.

You must configure a logical interface to be able to use the physical device.

**Options**

Interface types on the switch are:

- Aggregated Ethernet (**ae**)
- Gigabit Ethernet (**ge**)
- Loopback (**lo0**)
- Management Ethernet (**me0**)
- Routed VLAN interface (RVI) (**vlan**)



**NOTE:** Routed VLAN interfaces, also referred to as integrated routing and bridging (IRB) interfaces, are not supported on OCX Series switches.

- 10-Gigabit Ethernet (**xe**)

Not all interface types support all **family** substatements. Check your switch CLI for supported substatements for a particular protocol family configuration.

**Required Privilege Level**

interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)
- *Configuring Gigabit and 10-Gigabit Ethernet Interfaces*
- [Configuring Link Aggregation on page 77](#)
- *Configuring IRB Interfaces*
- *Junos OS Network Interfaces Library for Routing Devices*



## fibre-channel (Alarm)

---

|                                 |                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>fibre-channel {<br/>    link-down (red   yellow   ignore);<br/>}</code>                                                                             |
| <b>Hierarchy Level</b>          | [edit chassis <code>alarm</code> ],<br>[edit chassis <code>interconnect-device name alarm</code> ],<br>[edit chassis <code>node-group name alarm</code> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                         |
| <b>Description</b>              | Configure alarms for a Fibre Channel interface.                                                                                                           |
| <b>Options</b>                  | The remaining statement is explained separately.—                                                                                                         |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Understanding Alarms</i></li><li>• <i>Interface Alarm Messages</i></li></ul>                                   |

## filter

---

|                            |                                                                                                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre>filter {<br/>  group <i>filter-group-number</i>;<br/>  input <i>filter-name</i>;<br/>  input-list [ <i>filter-names</i> ];<br/>  output <i>filter-name</i>;<br/>  output-list [ <i>filter-names</i> ];<br/>}</pre>                         |
| <b>Hierarchy Level</b>     | [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> ],<br>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i> ]      |
| <b>Release Information</b> | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                  |
| <b>Description</b>         | Apply a filter to an interface. You can also use filters for encrypted traffic. When you configure filters, you can configure them under the <b>family ethernet-switching</b> , <b>inet</b> , <b>inet6</b> , <b>mpls</b> , or <b>vpls</b> only. |




**NOTE:** On QFX3500 and QFX3600 switches running Enhanced Layer 2 Software and on OCX Series switches, VPLS is not supported.

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Options</b>                  | <p><b>group <i>filter-group-number</i></b>—Define an interface to be part of a filter group.<br/><b>Range:</b> 1 through 255</p> <p><b>input <i>filter-name</i></b>—Name of one filter to evaluate when packets are received on the interface.</p> <p><b>output <i>filter-name</i></b>—Name of one filter to evaluate when packets are transmitted on the interface.</p> <p>The remaining statements are explained separately.</p>                                                                      |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Applying a Filter to an Interface</i></li><li>• <i>Junos OS Services Interfaces Library for Routing Devices</i></li><li>• <i>Routing Policies, Firewall Filters, and Traffic Policers Feature Guide for Routing Devices</i></li><li>• <i>Junos OS Administration Library for Routing Devices</i></li><li>• <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i></li><li>• <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i></li></ul> |

- *Configuring Gigabit and 10-Gigabit Ethernet Interfaces*
- *Configuring Firewall Filters (CLI Procedure)*
- *Configuring Firewall Filters and Policers for VPLS*
- *family*
- *family*

## flow-control

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (flow-control   no-flow-control);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | [edit <b>interfaces</b> <i>interface-name</i> <b>ether-options</b> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | <p>Explicitly enable or disable symmetric Ethernet PAUSE flow control, which regulates the flow of packets from the switch to the remote side of the connection by pausing all traffic flows on a link during periods of network congestion. Symmetric flow control means that Ethernet PAUSE is enabled in both directions. The interface generates and sends Ethernet PAUSE messages when the receive buffers fill to a certain threshold and the interface responds to PAUSE messages received from the connected peer. By default, flow control is disabled.</p> <p>You can configure asymmetric flow control by including the <b>configured-flow-control</b> statement at the [edit <b>interfaces</b> <i>interface-name</i> <b>ether-options</b> hierarchy level. Symmetric flow control and asymmetric flow control are mutually exclusive features. If you attempt to configure both, the switch returns a commit error.</p> <div> <b>NOTE:</b> Ethernet PAUSE temporarily stops transmitting all traffic on a link when the buffers fill to a certain threshold. To temporarily pause traffic on individual “lanes” of traffic (each lane contains the traffic associated with a particular IEEE 802.1p code point, so there can be eight lanes of traffic on a link), use priority-based flow control (PFC).</div> <p>Ethernet PAUSE and PFC are mutually exclusive features, so you cannot configure both of them on the same interface. If you attempt to configure both Ethernet PAUSE and PFC on an interface, the switch returns a commit error.</p> <p>OCX Series switches do not support PFC.</p> |
| <b>Default</b>                  | Flow control is disabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">configured-flow-control on page 102</a></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

- *Configuring Gigabit and 10-Gigabit Ethernet Interfaces*
- *Understanding CoS Flow Control (Ethernet PAUSE and PFC)*
- *Junos OS Network Interfaces Library for Routing Devices*

## fpc


|                                 |                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>fpc slot {   auto-speed-detection disable;   pic <i>pic-number</i> {     tunnel-port <i>port-number</i> tunnel-services;     port <i>port-number</i> {       channel-speed (<i>speed</i> disable-auto-speed-detection) ;     }     port-range <i>port-range-low port-range-high</i> {       channel-speed (<i>speed</i> disable-auto-speed-detection);     }   } }</pre> |
| <b>Hierarchy Level</b>          | [edit chassis]                                                                                                                                                                                                                                                                                                                                                                |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>                                                                                                                                                                                                                      |
| <b>Description</b>              | <p>Configure the FPC slot number. For QFX3500 switches, the slot is a line card slot.</p> <p>For generic routing encapsulation (GRE) tunneling, use the <b>tunnel-port</b> statement to specify the port that you want to convert to a GRE tunnel port.</p>                                                                                                                   |
| <b>Options</b>                  | <p><b>slot</b>—Number of the FPC slot. For QFX3500, QFX3600, and OCX Series devices, the slot number is always <b>0</b>.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>show chassis fpc</i></li> <li>• <i>Configuring Generic Routing Encapsulation Tunneling (CLI Procedure)</i></li> </ul>                                                                                                                                                                                                             |

## gratuitous-arp-reply

---

|                                 |                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (gratuitous-arp-reply   no-gratuitous-arp-reply);                                                                       |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> ],<br>[edit interfaces <b>interface-range</b> <i>interface-range-name</i> ]      |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                       |
| <b>Description</b>              | Enable processing of ARP updates received via gratuitous ARP reply messages.                                            |
| <b>Default</b>                  | Updating of the ARP cache is disabled on all Ethernet interfaces.                                                       |
| <b>Options</b>                  | <b>gratuitous-arp-reply</b> —Update the ARP cache.<br><b>no-gratuitous-arp-reply</b> —Do not update the ARP cache.      |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## hold-time (Physical Interface)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | hold-time up <i>milliseconds</i> down <i>milliseconds</i> ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | [edit <b>interfaces</b> <i>interface-name</i> ],<br>[edit <b>interfaces</b> <i>interface-range</i> <i>interface-range-name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 10.4R5 for EX Series switches.<br>Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                   |
| <b>Description</b>              | Specify the <b>hold-time</b> value to use to damp shorter interface transitions milliseconds.<br>When an interface goes from up to down, it is not advertised to the rest of the system as being down until it has remained down for the hold-time period. Similarly, an interface is not advertised as being up until it has remained up for the hold-time period.                                                                                                                                                                                                                                                       |
|                                 | <div>  <b>NOTE:</b> <ul style="list-style-type: none"> <li>We recommend that you configure the hold-time value after determining an appropriate value by performing repeated tests in the actual hardware environment. This is because the appropriate value for hold-time depends on the hardware (XFP, SFP, SR, ER, or LR) used in the networking environment.</li> <li>The hold-time option is not available for controller interfaces.</li> </ul> </div>                                                                             |
| <b>Default</b>                  | Interface transitions are not damped.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Options</b>                  | <p><b>down <i>milliseconds</i></b>—Hold time to use when an interface transitions from up to down. Junos OS advertises the transition within 100 milliseconds of the time value you specify.</p> <p><b>Range:</b> 0 through 4,294,967,295</p> <p><b>Default:</b> 0 (interface transitions are not damped)</p> <p><b>up <i>milliseconds</i></b>—Hold time to use when an interface transitions from down to up. Junos OS advertises the transition within 100 milliseconds of the time value you specify.</p> <p><b>Range:</b> 0 through 4,294,967,295</p> <p><b>Default:</b> 0 (interface transitions are not damped)</p> |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><i>advertise-interval</i></li> <li><i>interfaces (for EX Series switches)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

- *Physical Interface Damping Overview*
- *Damping Shorter Physical Interface Transitions*
- *Damping Longer Physical Interface Transitions*



## irb (Interfaces)

```

Syntax irb {
 accounting-profile name;
 description text;

 (gratuitous-arp-reply | no-gratuitous-arp-reply);
 hold-time up milliseconds down milliseconds;
 mtu bytes;
 no-gratuitous-arp-request;

 traceoptions {
 flag flag;
 }
 (traps | no-traps);
 unit logical-unit-number {
 accounting-profile name;
 bandwidth rate;
 description text;
 disable;
 encapsulation type;
 family inet {
 accounting {
 destination-class-usage;
 source-class-usage {
 input;
 output;
 }
 }
 }
 address ipv4-address {
 arp ip-address (mac | multicast-mac) mac-address <publish>;
 broadcast address;
 preferred;
 primary;
 vrrp-group group-number {
 (accept-data | no-accept-data);
 advertise-interval seconds;
 advertisements-threshold number;
 authentication-key key;
 authentication-type authentication;
 fast-interval milliseconds;
 (preempt | no-preempt) {
 hold-time seconds;
 }
 }
 priority number;
 track {
 interface interface-name {
 bandwidth-threshold bandwidth;
 priority-cost number;
 }
 priority-hold-time seconds;
 route ip-address/mask routing-instance instance-name priority-cost cost;
 }
 }
 virtual-address [addresses];
 }
 }

```

```
 vrrp-inherit-from {
 active-group group-number;
 active-interface interface-name;
 }
 }
}
filter {
 input filter-name;
 output filter-name;
}
mtu bytes;
no-neighbor-learn;
no-redirects;
primary;
rpf-check {
 fail-filter filter-name;
 mode {
 loose;
 }
}
targeted-broadcast {
 forward-and-send-to-re;
 forward-only;
}
}
family inet6 {
 accounting {
 destination-class-usage;
 source-class-usage {
 input;
 output;
 }
 }
}
address address {
 eui-64;
 ndp ip-address (mac | multicast-mac) mac-address <publish>;
 preferred;
 primary;
 vrrp-inet6-group group-id {
 accept-data | no-accept-data;
 advertisements-threshold number;
 authentication-key key;
 authentication-type authentication;
 fast-interval milliseconds;
 inet6-advertise-interval milliseconds;
 preempt | no-preempt {
 hold-time seconds;
 }
 priority number;
 track {
 interface interface-name {
 bandwidth-threshold bandwidth priority-cost number;
 priority-cost number;
 }
 priority-hold-time seconds;
 route ip-address/mask routing-instance instance-name priority-cost cost;
 }
 }
}
```

```

 }
 virtual-inet6-address [addresses];
 virtual-link-local-address ipv6-address;
 vrrp-inherit-from {
 active-group group-number;
 active-interface interface-name;
 }
}
}
(dad-disable | no-dad-disable);
filter {
 input filter-name;
 output filter-name;
}
mtu bytes;
nd6-stale-time seconds;
no-neighbor-learn;
no-redirects;
policer {
 input policer-name;
 output policer-name;
}
rpf-check {
 fail-filter filter-name;
 mode {
 loose;
 }
}
}
}
family iso {
 address interface-address;
 mtu bytes;
}
family mpls {
 filter {
 input filter-name;
 output filter-name;
 }
 mtu bytes;
 policer {
 input policer-name;
 output policer-name;
 }
}
native-inner-vlan-id vlan-id;
proxy-arp (restricted | unrestricted);
(traps | no-traps);
vlan-id-list [vlan-id's];
vlan-id-range [vlan-id-range];
}
}

```

Hierarchy Level [edit interfaces *interface-name*

|                                 |                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.3R2 for EX Series switches.<br><b>irb</b> option introduced in Junos OS Release 13.2 for the QFX Series.                                                    |
| <b>Description</b>              | Configure the properties of a specific integrated bridging and routing (IRB) interface.<br><br>The remaining statements are explained separately.                                                       |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">[edit interfaces] Hierarchy Level</a></li><li>• <a href="#">[edit interfaces] Configuration Statement Hierarchy on EX Series Switches</a></li></ul> |

---

## inet (interfaces)



---

|                                 |                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>inet {<br/>    address <i>address</i> {<br/>        primary;<br/>        filter input <i>filter-name</i>;<br/>        filter output <i>filter-name</i>;<br/>        targeted-broadcast;<br/>    }<br/>}</pre> |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces interface-name unit logical-unit-number</a> family],<br>[edit <a href="#">interfaces interface-range interface-name unit logical-unit-number</a> family]                              |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                      |
| <b>Description</b>              | Configure the primary IP address for the logical interface.                                                                                                                                                        |
| <b>Default</b>                  | You must configure a logical interface to be able to use the physical device.                                                                                                                                      |
| <b>Options</b>                  | The remaining statements are explained separately.—                                                                                                                                                                |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li></ul>                                                                                |

## inet6 (interfaces)

|                                 |                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> inet6 {     address address {         eui-64         preferred         primary;         filter input <i>filter-name</i>;         filter output <i>filter-name</i>;     } } </pre>                                 |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces interface-name unit logical-unit-number</a> family],<br>[edit <a href="#">interfaces interface-range interface-name unit logical-unit-number</a> family]                                   |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.2 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                           |
| <b>Description</b>              | Configure the primary IP address for the logical interface.                                                                                                                                                             |
| <b>Default</b>                  | You must configure a logical interface to be able to use the physical device.                                                                                                                                           |
| <b>Options</b>                  | The remaining statements are explained separately.—                                                                                                                                                                     |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li> <li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces</a></li> </ul> |

## interface-mode

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | interface-mode (access   trunk);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge],<br>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family ethernet-switching],<br>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.2.<br>Statement introduced in Junos OS Release 13.2X50-D10 for EX Series switches.<br>Statement introduced in Junos OS Release 13.2 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | <p> <b>NOTE:</b> This statement supports the Enhanced Layer 2 Software (ELS) configuration style. If your switch runs software that does not support ELS, see <a href="#">port-mode</a>. For ELS details, see <i>Getting Started with Enhanced Layer 2 Software</i>.</p> <p>(QFX Series 3500 and 3600 standalone switches)—Determine whether the logical interface accepts or discards packets based on VLAN tags. Specify the <b>trunk</b> option to accept packets with a VLAN ID that matches the list of VLAN IDs specified in the <b>vlan-id</b> or <b>vlan-id-list</b> statement, then forward the packet within the bridge domain or VLAN configured with the matching VLAN ID. Specify the <b>access</b> option to accept packets with no VLAN ID, then forward the packet within the bridge domain or VLAN configured with the VLAN ID that matches the VLAN ID specified in the <b>vlan-id</b> statement.</p> <p> <b>NOTE:</b> On MX Series routers, if you want IGMP snooping to be functional for a bridge domain, then you should not configure <b>interface-mode</b> and <b>irb</b> for that bridge. Such a configuration commit succeeds, but IGMP snooping is not functional, and a message informing the same is displayed. For more information, see <i>Configuring a Trunk Interface on a Bridge Network</i>.</p> |
| <b>Options</b>                  | <p><b>access</b>—Configure a logical interface to accept untagged packets. Specify the VLAN to which this interface belongs using the <b>vlan-id</b> statement.</p> <p><b>trunk</b>—Configure a single logical interface to accept packets tagged with any VLAN ID specified with the <b>vlan-id</b> or <b>vlan-id-list</b> statement.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><i>Configuring a Logical Interface for Access Mode</i></li> <li><i>Configuring a Logical Interface for Trunk Mode</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

- *Example: Connecting Access Switches to a Distribution Switch*

## interface-range

**Syntax** The `vlan-id` statement is not supported on OCX Series switches.

```
interface-range interface-range-name {
 disable;
 description text;
 ether-options {
 802.3ad aex {
 lacp {
 force-up;
 }
 }
 }
 (auto-negotiation| no-auto-negotiation);
 (flow-control | no-flow-control);
 link-mode mode;
 speed (auto-negotiation | speed);
}
hold-time milliseconds down milliseconds;
member interface-name;
member-range starting-interface-name to ending-interface-name;
mtu bytes;
unit logical-unit-number {
 description text;
 disable;
 family family-name {...}
 (traps | no traps);
 vlan-id vlan-id-number;
}
```

**Hierarchy Level** [edit [interfaces](#)]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description**



**NOTE:** The `vlan-id` statement and Fibre Channel interfaces are not supported on OCX Series switches.

Group interfaces that share a common configuration profile.



**NOTE:** The interface range definition is supported only for Gigabit Ethernet, 10-Gigabit Ethernet, and Fibre Channel interfaces.

**Options** *interface-range-name*—Name of the interface range.





**NOTE:** You can use regular expressions and wildcards to specify the interfaces in the member range configuration. Do not use wildcards for interface types.

The remaining statements are explained separately.

|                                 |                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|

**Related Documentation**

- [Understanding Interface Ranges on page 11](#)
- [Interfaces Overview on page 3](#)
- *Interfaces Overview*
- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)
- *Configuring Gigabit and 10-Gigabit Ethernet Interfaces*
- *Junos OS Network Interfaces Library for Routing Devices*

## interfaces

**Syntax** The following statements and their associated substatements are not supported on OCX Series switches: **auto-negotiation**, **speed**, **ethernet-switching**, **fcoe-lag**, **fibre-channel**, **fibrechannel-options**, **mc-ae**, **vlan**, **vlan-id**, and **vlan-tagging**.

```

interfaces {
 aex {
 disable;
 aggregated-ether-options {
 configured-flow-control {
 rx-buffers (on | off);
 tx-buffers (on | off);
 }
 (fcoe-lag | no-fcoe-lag);
 (flow-control | no-flow-control);
 lacp mode {
 admin-key key;
 force-up;
 periodic interval;
 system-id mac-address;
 }
 link-speed speed;
 local-bias (edit interfaces ae);
 loopback;
 no-loopback;
 minimum-links number;
 }
 mc-ae {
 chassis-id chassis-id;
 mc-ae-id mc-ae-id;
 mode (active-active);
 status-control (active | standby);
 }
 description text;
 gratuitous-arp-reply | no-gratuitous-arp-reply
 hold-time down milliseconds up milliseconds;
 mtu bytes;
 no-gratuitous-arp-request;
 short-reach-mode (enable | disable);
 traceoptions;
 (traps | no traps);
 unit logical-unit-number {
 disable;
 description text;
 family {
 ethernet-switching {
 filter input filter-name;
 filter output filter-name;
 native-vlan-id vlan-id;
 port-mode mode;
 reflective-relay;
 vlan {
 members [(all | names | vlan-ids)];
 }
 }
 }
 }
 }
}

```

```

 }
 }
 inet {
 address address {
 primary;
 }
 filter input filter-name;
 filter output filter-name;
 primary;
 targeted-broadcast;
 }
 (traps | no traps);
 vlan-id vlan-id-number;
}
vlan-tagging;
}
interface-range interface-range-name {
 disable;
 description text;
 ether-options {
 802.3ad aex {
 lacp {
 force-up;
 }
 }
 }
 (auto-negotiation | no-auto-negotiation);
 configured-flow-control {
 rx-buffers (on | off);
 tx-buffers (on | off);
 }
 (flow-control | no-flow-control);
 link-mode mode;
 speed (auto-negotiation | speed);
}
hold-time milliseconds down milliseconds;
member interface-name;
member-range starting-interface-name to ending-interface-name;
mtu bytes;
unit logical-unit-number {
 disable;
 description text;
 family family-name {...}
 (traps | no traps);
 vlan-id vlan-id-number;
}
}
lo0 {
 disable;
 description text;
 hold-time milliseconds down milliseconds;
 traceoptions;
 (traps | no traps);
 unit logical-unit-number {
 disable;
 description text;
 family {

```

```

 inet {
 address address {
 primary;
 }
 filter input filter-name;
 filter output filter-name;
 primary;
 targeted-broadcast;
 }
 (traps | no traps);
}
}
mex {
 disable;
 description text;
 hold-time milliseconds down milliseconds;
 (gratuitous-arp-reply | no-gratuitous-arp-reply);
 no-gratuitous-arp-request;
 traceoptions;
 traps;
 unit logical-unit-number {
 disable;
 description text;
 family {
 ethernet-switching {
 filter input filter-name;
 filter output filter-name;
 native-vlan-id vlan-id;
 port-mode mode;
 reflective-relay;
 vlan {
 members [(all | names | vlan-ids)];
 }
 }
 }
 inet {
 address address {
 primary;
 filter input filter-name;
 filter output filter-name;
 primary;
 targeted-broadcast;
 }
 }
 }
 traps;
 vlan-id vlan-id-number;
}
}
vlan-tagging;
vlan {
 disable;
 description text;
 (gratuitous-arp-reply | no-gratuitous-arp-reply);
 hold-time milliseconds down milliseconds;
 mtu bytes;
 no-gratuitous-arp-request;
 traceoptions;
 (traps | no traps);
}

```

```

unit logical-unit-number {
 description text;
 disable;
 family {
 inet {
 address address {
 primary;
 }
 filter input filter-name;
 filter output filter-name;
 primary;
 targeted-broadcast;
 }
 (traps | no traps);
 }
}
fc-0/0/port {
 fibrechannel-options {
 bb-sc-n;
 (loopback | no-loopback);
 speed (auto-negotiation | 2g | 4g | 8g);
 }
 unit logical-unit-number {
 disable;
 description text;
 family {
 fibre-channel {
 port-mode np-port;
 }
 }
 (traps | no traps);
 }
}
ge-0/0/port {
 disable;
 description text;
 ether-options {
 802.3ad aex {
 lacp {
 force-up;
 primary;
 }
 }
 }
 (auto-negotiation | no-auto-negotiation);
 configured-flow-control {
 rx-buffers (on | off);
 tx-buffers (on | off);
 }
 (flow-control | no-flow-control);
 link-mode mode;
 loopback;
 no-loopback;
 speed (auto-negotiation | speed);
}
gratuitous-arp-reply| no-gratuitous-arp-reply);
hold-time milliseconds down milliseconds;
mtu bytes;
no-gratuitous-arp-request;

```

```

traceoptions;
(traps | no traps);
unit logical-unit-number {
 description text;
 disable;
 family {
 ethernet-switching {
 filter input filter-name;
 filter output filter-name;
 native-vlan-id vlan-id;
 port-mode mode;
 reflective-relay;
 vlan {
 members [(all | names | vlan-ids)];
 }
 }
 inet {
 address address {
 primary;
 }
 filter input filter-name;
 filter output filter-name;
 primary;
 targeted-broadcast;
 }
 }
 (traps | no traps);
 vlan-id vlan-id-number;
}
vlan-tagging;
}
vrrp-group group-id {
 (accept-data | no-accept-data);
 advertise-interval seconds;
 authentication-key key;
 authentication-type authentication;
 fast-interval milliseconds;
 (preempt | no-preempt) {
 hold-time seconds;
 }
 priority number;
 track {
 interface interface-name {
 bandwidth-threshold bits-per-second priority-cost priority;
 priority-cost priority;
 }
 priority-hold-time seconds;
 route prefix/prefix-length routing-instance instance-name priority-cost priority;
 }
}
virtual-address [addresses];
}
xe-0/0/port {
 disable;
 description text;
 ether-options {
 802.3ad aex {

```

```

 lacp {
 force-up;
 (primary | backup);
 }
}
configured-flow-control {
 rx-buffers (on | off);
 tx-buffers (on | off);
}
(flow-control | no-flow-control);
loopback;
no-loopback;
}
(gratuitous-arp-reply | no-gratuitous-arp-reply)
hold-time milliseconds down milliseconds;
mtu bytes;
no-gratuitous-arp-request;
traceoptions;
(traps | no traps);
unit logical-unit-number {
 disable;
 description text;
 family {
 ethernet-switching {
 filter input filter-name;
 filter output filter-name;
 native-vlan-id vlan-id;
 port-mode mode;
 reflective-relay;
 vlan {
 members [(all | names | vlan-ids)];
 }
 }
 fibre-channel {
 port-mode (f-port | np-port);
 }
 inet {
 address address {
 primary;
 }
 filter input filter-name;
 filter output filter-name;
 primary;
 targeted-broadcast;
 }
 (traps | no traps);
 vlan-id vlan-id-number;
 }
 vlan-tagging;
}
}

```

Hierarchy Level [edit]

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | <p>Configure the interfaces on the QFX Series and OCX Series.</p> <p>The following statements and their associated substatements are not supported on OCX Series switches: <b>auto-negotiation</b>, <b>ethernet-switching</b>, <b>fcoe-lag</b>, <b>fibre-channel</b>, <b>fibrenchannel-options</b>, <b>mc-ae</b>, <b>speed</b>, <b>vlan</b>, <b>vlan-id</b>, and <b>vlan-tagging</b></p> <p>Most standard Junos OS configuration statements are available in the Junos OS for a switch. This topic lists Junos OS statements that you commonly use when configuring a switch as well as statements added to support switches only.</p> |
| <b>Options</b>                  | <p><b>aex</b>—Configure an aggregated Ethernet interface.</p> <p><b>xe-0/0/</b><i>port</i><b>/</b>—Configure a 10-Gigabit Ethernet interface.</p> <p><b>ge-0/0/</b><i>port</i><b>/</b>—Configure a Gigabit Ethernet interface.</p> <p><b>fc-0/0/</b><i>port</i><b>/</b>—Configure a Fibre Channel interface.</p> <p><b>meX</b>/—Configure a management interface.</p> <p><b>mc-ae</b>—Configure a multichassis aggregated Ethernet (MC-AE) interface.</p> <p>The remaining statements are explained separately.</p>                                                                                                                    |
| <b>Required Privilege Level</b> | <p><b>interface</b>—To view this statement in the configuration.</p> <p><b>interface-control</b>—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Interfaces Overview on page 3</a></li><li>• <a href="#">Understanding Interface Ranges on page 11</a></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces</a></li><li>• <a href="#">Configuring Link Aggregation on page 77</a></li><li>• <a href="#">Configuring a Layer 3 Logical Interface on page 68</a></li></ul>                                                                                                                                        |



## link-down

---


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | link-down (red   yellow   ignore);                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | [edit chassis <b>alarm ethernet</b> ],<br>[edit chassis <b>alarm fibre-channel</b> ],<br>[edit chassis <b>interconnect-device</b> <i>name</i> <b>alarm ethernet</b> ],<br>[edit chassis <b>node-group</b> <i>name</i> <b>alarm fibre-channel</b> ]                                                                                                                                                                                                                                         |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | Specify either red, yellow, or ignore to display when the link is down.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Options</b>                  | <p><b>red</b>—Indicates that one or more hardware components have failed or exceeded temperature thresholds, or an alarm condition configured on an interface has triggered a critical warning.</p> <p><b>yellow</b>—Indicates a noncritical condition on the device that, if left unchecked, might cause an interruption in service or degradation in performance. A yellow alarm condition requires monitoring or maintenance.</p> <p><b>ignore</b>—Suppresses or ignores the alarm.</p> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                             |

## link-mode

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>link-mode mode;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">ether-options</a> ]                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | Set the device's link-connection characteristic.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Default</b>                  | The <b>full-duplex</b> mode is enabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Options</b>                  | <p><b>mode</b> —Link characteristic:</p> <ul style="list-style-type: none"><li>• <b>full-duplex</b>—Connection is full duplex.</li><li>• <b>half-duplex</b>—Connection is half duplex.</li><li>• <b>automatic</b>—Link mode is negotiated.</li></ul> <p>If <b>no-auto-negotiation</b> is specified in the <b>ether-options</b> option, you can select only <b>full-duplex</b> or <b>half-duplex</b>. If <b>auto-negotiation</b> is specified in the <b>ether-options</b> option, you can select any mode.</p> |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces</a></li><li>• <a href="#">Junos OS Network Interfaces Library for Routing Devices</a></li></ul>                                                                                                                                                                                                        |

## link-speed

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | link-speed <i>speed</i> ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | [edit interfaces aex <a href="#">aggregated-ether-options</a> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>              | For aggregated Ethernet interfaces only, set the required link speed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <p><b>speed</b>—For aggregated Ethernet links, you can specify the speed in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation <b>k</b> (1000), <b>m</b> (1,000,000), or <b>g</b> (1,000,000,000).</p> <p>On QFX5100 standalone switches, you can configure <b>mixed</b> as the link speed. The <b>mixed</b> option allows you to configure mixed rate aggregated Ethernet bundles on a QFX5100 standalone switch with link speeds of 40G and 10G only. Load balancing will not work if you configure link speeds that are not supported.</p> <p>Aggregated Ethernet links on the QFX Series can have one of the following speed values:</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p> <b>NOTE:</b> OCX Series switches only support 10g and 40g interfaces. Mixed rate aggregated Ethernet interfaces are not support on the OCX Series.</p> </div> <ul style="list-style-type: none"> <li>• <b>100g</b>—Links are 100 Gbps.</li> <li>• <b>100m</b>—Links are 100 Mbps.</li> <li>• <b>10g</b>—Links are 10 Gbps.</li> <li>• <b>1g</b>—Links are 1 Gbps.</li> <li>• <b>40g</b>—Links are 40 Gbps.</li> <li>• <b>50g</b>—Links are 50 Gbps.</li> <li>• <b>80g</b>—Links are 80 Gbps.</li> <li>• <b>8g</b>—Links are 8 Gbps.</li> <li>• <b>0c192</b>—Links are OC-192.</li> <li>• <b>mixed</b>—Links are 10 Gbps and 40Gbps.</li> </ul> |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring Link Aggregation on page 77</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## loopback (Aggregated Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet)

---

|                                 |                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (loopback   no-loopback);                                                                                                                     |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> <b>aggregated-ether-options</b> ],<br>[edit interfaces <i>interface-name</i> <b>ether-options</b> ]    |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series. |
| <b>Description</b>              | For aggregated Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces, enable or disable loopback mode.                               |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Ethernet Loopback Capability on page 41</a></li></ul>                         |

## management-ethernet (Alarm)

---

|                            |                                                                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | management-ethernet {<br><b>link-down</b> (red   yellow   ignore);<br>}                                                                                             |
| <b>Hierarchy Level</b>     | [edit chassis <b>alarm</b> ],<br>[edit chassis <b>interconnect-device</b> <i>name</i> <b>alarm</b> ],<br>[edit chassis <b>node-group</b> <i>name</i> <b>alarm</b> ] |
| <b>Release Information</b> | Statement introduced in Junos OS Release 12.2 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                       |
| <b>Description</b>         | Configure alarms for a management Ethernet interface.                                                                                                               |



**NOTE:** If you configure a yellow alarm on the Interconnect device, it will be handled as a red alarm.

---

|                                 |                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Options</b>                  | The remaining statement is explained separately.—                                                                       |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Understanding Alarms</i></li><li>• <i>Interface Alarm Messages</i></li></ul> |

---

## member

---



|                                 |                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>member <i>interface-name</i>;</code>                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces interface-range</a> <i>interface-range-name</i> ]                                                                                                                                                                                                                                                                                                    |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                     |
| <b>Description</b>              | Specify the name of the member interface belonging to an interface range on the QFX Series switch.                                                                                                                                                                                                                                                                                |
| <b>Options</b>                  | <i>interface-name</i> —Name of the interface.                                                                                                                                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i></li><li>• <a href="#">Interfaces Overview on page 3</a></li><li>• <i>Interfaces Overview</i></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul> |

## member-range

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>member-range <i>starting-interface-name ending-interface-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces</a> <i>interface-range interface-range-name</i> ]                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | Specify the names of the first and last members of a sequence of interfaces belonging to an interface range.                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <i>starting interface-name ending interface-name</i> —Name of the first member and the name of the last member in the interface sequence.                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Understanding Interface Ranges on page 11</a></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i></li><li>• <a href="#">Interfaces Overview on page 3</a></li><li>• <i>Interfaces Overview</i></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul> |

## mtu

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>mtu bytes;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>     | [edit <b>interfaces</b> <i>interface-name</i> ],<br>[edit <b>interfaces</b> <i>interface-range</i> <i>interface-name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b> | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>         | <p>Specify the maximum transmission unit (MTU) size for the media. Changing the media MTU size causes an interface to be deleted and added again. On QFX3500, QFX3600, QFX5100, and OCX Series switches, either standalone or as part of the QFabric system, the maximum MTU value on an untagged packet transiting through an ingress Gigabit Ethernet interface must be no more than the currently configured MTU value plus four, whereas the maximum MTU value on a tagged packet transiting through an ingress Gigabit Ethernet interface must be no more than the currently configured MTU value plus eight. The maximum MTU value on an untagged or tagged packet transiting through an ingress 10-Gigabit Ethernet interface must be no more than the currently configured MTU value plus eight.</p> <p>Keep the following points in mind if you are configuring MTU size for jumbo frames on these special types of interfaces:</p> <ul style="list-style-type: none"> <li>• <b>For LAG interfaces</b>—Configuring the jumbo MTU size on a link aggregation group (LAG) interface (<b>aex</b>) automatically configures the jumbo MTU size on the member links.</li> <li>• <b>For RVIs</b>—Jumbo frames of up to 9216 bytes are supported on the routed VLAN interface (RVI), which is named <b>vlan</b>. The RVI functions as a logical router. To route jumbo data packets on the RVI, you must configure the jumbo MTU size on the member physical interfaces of the RVI and not on the RVI itself (the <b>vlan</b> interface). However, for jumbo control packets—for example, to ping the RVI with a packet size of 6000 bytes or more—you must explicitly configure the jumbo MTU size on the interface named <b>vlan</b> (the RVI). On a QFX5100 switch jumbo frames on the RVI are configured on the basis of the interface MTU.</li> </ul> <div style="margin-top: 20px;"> <div style="display: flex; align-items: center;">  <div> <p><b>NOTE:</b> RVIs are not supported on OCX Series switches.</p> </div> </div> <div style="margin-top: 20px;"> <div style="display: flex; align-items: center;">  <div> <p><b>CAUTION:</b> Setting or deleting the jumbo MTU size on the RVI (the <b>vlan</b> interface) while the switch is transmitting packets might result in dropped packets.</p> </div> </div> </div> </div> |
| <b>Options</b>             | <p><b>bytes</b> —MTU size.</p> <p><b>Range:</b> 64 through 9216 bytes</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

**Default:** 1514 bytes

|                                 |                                                                                                                                                                                                                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul> |

---

## no-gratuitous-arp-request

---

|                                 |                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | no-gratuitous-arp-request;                                                                                                                                                                            |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces interface-name</a> ],<br>[edit <a href="#">interfaces interface-range interface-name</a> ]                                                                               |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                     |
| <b>Description</b>              | Configure the switch not to respond to gratuitous ARP requests. You can disable responses to gratuitous ARP requests on both Layer 2 Ethernet switching interfaces and routed VLAN interfaces (RVIs). |
| <b>Default</b>                  | Gratuitous ARP responses are enabled on all Ethernet switching interfaces and RVIs.                                                                                                                   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring IRB Interfaces</i></li></ul>                                                                                                                   |



## pic

**Syntax** `pic pic-number {  
     tunnel-port port-number tunnel-services;  
     port port-number {  
         channel-speed (speed|disable-auto-speed-detection) ;  
     }  
     port-range port-range-low port-range-high {  
         channel-speed (speed|disable-auto-speed-detection) ;  
     }  
 }`

**Hierarchy Level** [edit chassis fpc *slot*]

**Release Information** Option **channel-speed** introduced in Junos OS Release 13.2 for the QFX Series.



**NOTE:** This statement is not supported on the OCX Series.

**Description** (QFX3500, QFX3600, and QFX5100 standalone switches running Enhanced Layer 2 Software only)—Configure a specific port or a range of ports to operate as 10-Gigabit Ethernet ports or 40-Gigabit Ethernet ports.

**Options** **pic *pic-number***—(QFX3500 standalone switch only) Number of the physical interface card (PIC) on which you want to configure port types. Specify **1** to configure 10-Gigabit Ethernet or 40-Gigabit Ethernet type ports.  
 (QFX3600 standalone switch only) Number of the physical interface card (PIC) on which you want to configure port types. Specify **0** to configure 10-Gigabit Ethernet or 40-Gigabit Ethernet type ports.

**port *physical-port-number***—Port number on which you want to configure the port type.

**port-range-low**—Lowest-numbered port in the range of ports.

**port-range-high**—Highest-numbered port in the range of ports.


**channel-speed (*speed* |disable-auto-speed-detection)** —Configure *10g* for 10-Gigabit Ethernet type ports, and configure *disable-auto-speed-detection* to disable auto-channelization.

**Required Privilege Level** interface—To view this statement in the configuration.  
 interface-control—To add this statement to the configuration.

**Related Documentation**

- [Channelizing Interfaces on page 39](#)

## rx-buffers

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <code>rx-buffers (on   off);</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">ether-options</a> <a href="#">configured-flow-control</a> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Statement introduced in Junos OS Release 12.1 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Enable or disable an interface to generate and send Ethernet PAUSE messages. If you enable the receive buffers to generate and send PAUSE messages, when the receive buffers reach a certain level of fullness, the interface sends a PAUSE message to the connected peer. If the connected peer is properly configured, it stops transmitting frames to the interface on the entire link. When the interface receive buffer empties below a certain threshold, the interface sends a message to the connected peer to resume sending frames.</p> <p>Ethernet PAUSE prevents buffers from overflowing and dropping packets during periods of network congestion. If the other devices in the network are also configured to support PAUSE, PAUSE supports lossless operation. Use the <b>rx-buffers</b> statement with the <b>tx-buffers</b> statement to configure asymmetric Ethernet PAUSE on an interface. (Use the <b>flow-control</b> statement to enable symmetric PAUSE and the <b>no-flow-control</b> statement to disable symmetric PAUSE on an interface. Symmetric flow control and asymmetric flow control are mutually exclusive features. If you attempt to configure both, the switch returns a commit error.)</p> |
| <div>  <p><b>NOTE:</b> Ethernet PAUSE temporarily stops transmitting all traffic on a link when the buffers fill to a certain threshold. To temporarily pause traffic on individual “lanes” of traffic (each lane contains the traffic associated with a particular IEEE 802.1p code point, so there can be eight lanes of traffic on a link), use priority-based flow control (PFC).</p> <p>Ethernet PAUSE and PFC are mutually exclusive features, so you cannot configure both of them on the same interface. If you attempt to configure both Ethernet PAUSE and PFC on an interface, the switch returns a commit error.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Default</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Flow control is disabled. You must explicitly configure Ethernet PAUSE flow control on interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <code>on   off</code> —Enable or disable an interface to generate and send Ethernet PAUSE messages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>• <a href="#">flow-control on page 116</a></li> <li>• <a href="#">tx-buffers on page 151</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

- *Configuring CoS Asymmetric Ethernet PAUSE Flow Control*
- *Enabling and Disabling CoS Symmetric Ethernet PAUSE Flow Control*
- *Understanding CoS Flow Control (Ethernet PAUSE and PFC)*



## source

---

|                                 |                                                                                                                                                                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>source <i>source-address</i>;</code>                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> tunnel]                                                                                                                                                                                              |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 12.1 for EX Series switches.<br>Statement introduced in Junos OS Release 13.2 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series. |
| <b>Description</b>              | Specify the source address of the tunnel.                                                                                                                                                                                                                                   |
| <b>Default</b>                  | If you do not specify a source address, the tunnel uses the unit's primary address as the source address of the tunnel.                                                                                                                                                     |
| <b>Options</b>                  | <b><i>source-address</i></b> —Address of the local side of the tunnel. This is the address that is placed in the outer IP header's source field.                                                                                                                            |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Configuring Generic Routing Encapsulation Tunneling (CLI Procedure)</i></li> </ul>                                                                                                                                              |

## speed

---

|                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                               | (speed 100m   1g);                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>                                                                                                                                                      | [edit <b>interfaces</b> <i>interface-name</i> ]                                                                                                                                                                                                                                                                                             |
| <b>Release Information</b>                                                                                                                                                  | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                                                                                                           |
| <b>Description</b>                                                                                                                                                          | Configure the speed of the interface. On QFX5100 devices using 1-Gigabit Ethernet Copper SFP interfaces, you can configure the speed to be 100 Mbps. To return to the default speed of 1 Gbps, delete the <b>100m.</b> statement at the [edit <b>interfaces</b> <i>interface-name</i> <b>speed</b> ] CLI hierarchy.                         |
| <div> <b>NOTE:</b> Only 10g and 40g interfaces are supported on OCX Series switches.</div> |                                                                                                                                                                                                                                                                                                                                             |
| <div> <b>NOTE:</b> Autonegotiation is not supported on QFX5100 devices.</div>              |                                                                                                                                                                                                                                                                                                                                             |
| <b>Default</b>                                                                                                                                                              | The speed for 1-Gigabit Ethernet Copper SFP interfaces is set to 1 Gbps by default, but you can configure the speed to be 100 Mbps. The speed for 10-Gigabit Ethernet interfaces is set to 10 Gbps by default and cannot be configured to operate in a different speed.                                                                     |
| <b>Options</b>                                                                                                                                                              | <ul style="list-style-type: none"><li>• <b>100m</b>—100 Mbps</li><li>• <b>1g</b>—1 Gbps</li></ul>                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b>                                                                                                                                             | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                     |
| <b>Related Documentation</b>                                                                                                                                                | <ul style="list-style-type: none"><li>• <a href="#">auto-negotiation on page 100</a></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul> |


## targeted-broadcast

---


|                                 |                                                                                                                                                                                                                                                                               |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | targeted-broadcast;                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | [edit <b>interfaces</b> <i>interface-name</i> <b>unit</b> <i>logical-unit-number</i> family inet],<br>[edit <b>interfaces</b> <i>interface-range</i> <i>interface-range-name</i> <b>unit</b> <i>logical-unit-number</i> family inet]                                          |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                 |
| <b>Description</b>              | Specify whether the IP packets destined for a Layer 3 broadcast need to be forwarded to both an egress interface and the Routing Engine, or to an egress interface only. The packets are broadcast only if the egress interface is a LAN interface.                           |
| <b>Default</b>                  | When this statement is not included, broadcast packets are sent to the Routing Engine only.                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring IP Directed Broadcast on an EX Series Switch</i></li> <li>• <i>Configuring IP Directed Broadcast (CLI Procedure)</i></li> <li>• <i>Understanding IP Directed Broadcast for EX Series Switches</i></li> </ul> |

## traceoptions (Individual Interfaces)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>traceoptions {<br/>    flag <i>flag</i>;<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | <p>Define tracing operations for individual interfaces.</p> <p>To specify more than one tracing operation, include multiple <b>flag</b> statements.</p> <p>The <b>traceoptions</b> statement for interfaces does not support a trace file. The logging is done by the kernel, so the tracing information is placed in the system <b>syslog</b> file in the directory <b>/var/log</b>.</p> <div> <b>NOTE:</b> The <b>traceoptions</b> statement is not supported on the QFX3000 QFabric system.</div> |
| <b>Default</b>                  | If you do not include this statement, no interface-specific tracing operations are performed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Options</b>                  | <p><b>flag</b>—Tracing operation to perform. To specify more than one tracing operation, include multiple <b>flag</b> statements. The following are the interface-specific tracing options.</p> <ul style="list-style-type: none"><li>• <b>all</b>—All interface tracing operations</li><li>• <b>event</b>—Interface events</li><li>• <b>ipc</b>—Interface interprocess communication (IPC) messages</li><li>• <b>media</b>—Interface media changes</li><li>• <b>q921</b>—ISDN Q.921 frames</li><li>• <b>q931</b>—ISDN Q.931 frames</li></ul>                                         |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Tracing Operations of an Individual Router or Switch Interface</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## tx-buffers

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | tx-buffers (on   off);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">ether-options</a> <a href="#">configured-flow-control</a> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 12.1 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | <p>Enable or disable an interface to respond to received Ethernet PAUSE messages. If you enable the transmit buffers to respond to PAUSE messages, when the interface receives a PAUSE message from the connected peer, the interface stops transmitting frames on the entire link. When the receive buffer on the connected peer empties below a certain threshold, the peer interface sends a message to the paused interface to resume sending frames.</p> <p>Ethernet PAUSE prevents buffers from overflowing and dropping packets during periods of network congestion. If the other devices in the network are also configured to support PAUSE, PAUSE supports lossless operation. Use the <b>tx-buffers</b> statement with the <b>rx-buffers</b> statement to configure asymmetric Ethernet PAUSE on an interface. (Use the <b>flow-control</b> statement to enable symmetric PAUSE and the <b>no-flow-control</b> statement to disable symmetric PAUSE on an interface. Symmetric flow control and asymmetric flow control are mutually exclusive features. If you attempt to configure both, the switch returns a commit error.)</p> |
|                                 | <div>  <p><b>NOTE:</b> Ethernet PAUSE temporarily stops transmitting all traffic on a link when the buffers fill to a certain threshold. To temporarily pause traffic on individual “lanes” of traffic (each lane contains the traffic associated with a particular IEEE 802.1p code point, so there can be eight lanes of traffic on a link), use priority-based flow control (PFC).</p> <p>Ethernet PAUSE and PFC are mutually exclusive features, so you cannot configure both of them on the same interface. If you attempt to configure both Ethernet PAUSE and PFC on an interface, the switch returns a commit error.</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Default</b>                  | Flow control is disabled. You must explicitly configure Ethernet PAUSE flow control on interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Options</b>                  | <b>on   off</b> —Enable or disable an interface to respond to an Ethernet PAUSE message.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">flow-control on page 116</a></li> <li>• <a href="#">rx-buffers on page 146</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

- *Configuring CoS Asymmetric Ethernet PAUSE Flow Control*
- *Enabling and Disabling CoS Symmetric Ethernet PAUSE Flow Control*
- *Understanding CoS Flow Control (Ethernet PAUSE and PFC)*



## unit

**Syntax** The **ethernet-switching** and **fibre-channel** statements and all of their substatements are not supported on OCX Series switches.

```
unit logical-unit-number {
 family {
 ethernet-switching {
 filter input filter-name;
 filter output filter-name;
 native-vlan-id vlan-id;
 port-mode mode;
 vlan {
 members [(all | names | vlan-ids)];
 }
 }
 fibre-channel {
 port-mode (f-port | np-port);
 }
 inet {
 address address {
 primary;
 }
 filter input filter-name;
 filter output filter-name;
 primary;
 targeted-broadcast;
 }
 }
}
```

**Hierarchy Level** [edit **interfaces** *interface-name*],  
[edit **interfaces** **interface-range** *interface-range-name*]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description**



**NOTE:** The **ethernet-switching** and **fibre-channel** statements and all of their substatements are not supported on OCX Series switches.

Configure a logical interface on the physical device. You must configure a logical interface to be able to use the physical device.

**Default** You must configure a logical interface to be able to use the physical device.

**Options** ***logical-unit-number***—Number of the logical unit.

**Range:** 0 through 16,384


The remaining statements are explained separately.

|                                 |                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i></li><li>• <a href="#">Configuring Link Aggregation on page 77</a></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul> |

---

## vlan-id

---

|                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                             | vlan-id <i>vlan-id-number</i> ;                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>                                                                                                                                                                                                    | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">unit</a> <i>logical-unit-number</i> ]                                                                                                                                                                                                                                     |
| <b>Release Information</b>                                                                                                                                                                                                | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                                                                                                            |
| <b>Description</b>                                                                                                                                                                                                        | For 10-Gigabit Ethernet and aggregated Ethernet interfaces only, bind an 802.1Q VLAN tag ID to a logical interface.                                                                                                                                                                                                                          |
| <div> <b>NOTE:</b> The VLAN tag ID cannot be configured on logical interface unit 0. The logical unit number must be 1 or higher.</div> |                                                                                                                                                                                                                                                                                                                                              |
| <b>Options</b>                                                                                                                                                                                                            | <i>vlan-id-number</i> —Valid VLAN identifier.<br><b>Range:</b> 1 through 4094                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b>                                                                                                                                                                                           | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                      |
| <b>Related Documentation</b>                                                                                                                                                                                              | <ul style="list-style-type: none"><li>• <a href="#">vlan-tagging on page 155</a></li><li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li><li>• <a href="#">Configuring a Layer 3 Logical Interface on page 68</a></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul> |

## vlan-tagging

---

|                                 |                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | vlan-tagging;                                                                                                                                                      |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces</a> <i>interface-name</i> ]<br>[edit <a href="#">interfaces</a> <a href="#">interface-range</a> <i>interface-range-name</i> ]         |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                  |
| <b>Description</b>              | Enable VLAN tagging. The platform receives and forwards single-tag frames with 802.1Q VLAN tags.                                                                   |
| <b>Default</b>                  | VLAN tagging is disabled by default.                                                                                                                               |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">vlan-id on page 154</a></li><li>• <a href="#">Configuring a Layer 3 Logical Interface on page 68</a></li></ul> |

## alarm (chassis)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>alarm {<br/>    interface-type {<br/>        alarm-name (ignore   red   yellow);<br/>    }<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | [edit chassis],<br>[edit chassis interconnect-device <i>name</i> ],<br>[edit chassis node-group <i>name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 12.2 for the ACX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | <p>Configure the chassis alarms and whether they trigger a red or yellow alarm, or whether they are ignored. Red alarm conditions light the <b>RED ALARM</b> LED on either the router's craft interface or the switch's LCD screen and trigger an audible alarm if one is connected to the contact on the craft interface or LCD screen. Yellow alarm conditions light the <b>YELLOW ALARM</b> LED on either the router's craft interface or the switch's LCD screen and trigger an audible alarm if one is connected to the craft interface or LCD screen.</p> <p>To configure more than one alarm, include multiple <i>alarm-name</i> lines.</p> |
| <b>Options</b>                  | <p><i>alarm-name</i>—Alarm condition. For a list of conditions, see <i>System-Wide Alarms and Alarms for Each Interface Type</i>.</p> <p><i>ignore</i>—The specified alarm condition does not set off any alarm.</p> <p><i>interface-type</i>—Type of interface on which you are configuring the alarm: <b>atm</b>, <b>ethernet</b>, <b>sonet</b>, or <b>t3</b>.</p> <p><b>red</b>—The specified alarm condition sets off a red alarm.</p> <p><b>yellow</b>—The specified alarm condition sets off a yellow alarm.</p>                                                                                                                             |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Understanding Alarms</i></li><li>• <i>Chassis Conditions That Trigger Alarms</i></li><li>• <i>Chassis Alarm Messages on a QFX3500 Device</i></li><li>• <i>Interface Alarm Messages</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                        |

## chassis

```
Syntax chassis {
 routing-engine {
 redundancy {
 failover {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 on-loss-of-keepalives;
 }
 graceful-switchover;
 }
 aggregated-devices {
 ethernet {
 device-count number;
 }
 alarm {
 interface-type {
 alarm-name (red | yellow | ignore);
 }
 }
 }
 forwarding-options profile-name {
 num-65-127-prefix value
 }
 fpc slot {
 auto-speed-detection disable
 pic pic-number{
 port port-number{
 tunnel-port port-number tunnel-services;
 channel-speed speed;
 }
 port-range port-range-low port-range-high {
 channel-speed speed;
 }
 }
 }
 maximum-ecmp next-hops;
 }
```

**Hierarchy Level** [edit]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Configure chassis-specific properties for the switch.  
  
The remaining statements are explained separately.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

- Related Documentation**
- [Configuring Link Aggregation on page 77](#)

## chassis (QFabric System)

```
Syntax chassis {
 interconnect-device {
 alarm {
 (ethernet | management-ethernet) {
 link-down (red | yellow | ignore);
 }
 }
 container-devices {
 device-count number;
 }
 craft-lockout {
 alarm {
 interface-type {
 link-down (red | yellow | ignore);
 }
 }
 container-devices {
 device-count number;
 }
 fpc slot {
 power (on | off);
 }
 routing-engine {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 }
 }
 fpc slot {
 power (on | off);
 }
 routing-engine {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 }
 }
 node-group name {
 aggregated-devices {
 ethernet {
 device-count number;
 }
 }
 alarm {
 interface-type {
 link-down (ignore | red | yellow);
 }
 }
 container-devices {
 device-count number;
 }
 node-device name {
```

```
 fibre-channel {
 port-range {
 port-range-low port-range-high;
 }
 }
 pic pic-number {
 fte {
 port port-number;
 port-range port-range-low port-range-high;
 }
 xe {
 port port-number;
 port-range port-range-low port-range-high;
 }
 xle {
 port port-number;
 port-range port-range-low port-range-high;
 }
 }
 }
 routing-engine {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 }
}
```

**Hierarchy Level**    [\[edit\]](#)

**Release Information**    Statement introduced in Junos OS Release 11.1 for the QFX Series.

**Description**    Configure chassis-specific properties for the switch.

The remaining statements are explained separately.

**Required Privilege Level**    interface—To view this statement in the configuration.  
                                  interface-control—To add this statement to the configuration.



---

## container-devices

---

|                                 |                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>container-devices {<br/>    device-count <i>number</i>;<br/>}</pre>                                                                                                           |
| <b>Hierarchy Level</b>          | <pre>[edit chassis]<br/>[edit chassis <i>interconnect-device name</i>]<br/>[edit chassis <i>node-group name</i>]</pre>                                                             |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.3 for QFX Series switches.                                                                                                             |
| <b>Description</b>              | Specify the container devices configuration. The <b>number</b> option specifies the number of sequentially numbered container interfaces, from <b>ci0</b> to <b>ci127</b> maximum. |
| <b>Options</b>                  | <b>number</b> —Number of container devices.<br><b>Range:</b> 1 through 128                                                                                                         |
| <b>Required Privilege Level</b> | <b>chassis</b> —To view this statement in the configuration.<br><b>chassis-control</b> —To add this statement to the configuration.                                                |

## craft-lockout

```

Syntax craft-lockout {
 alarm {
 interface-type {
 link-down (red | yellow | ignore);
 }
 }
 container-devices {
 device-count number;
 }
 fpc slot {
 pic pic-number {
 fibre-channel {
 port-range {
 port-range-low port-range-high;
 }
 }
 }
 }
 routing-engine {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 }
 }

```

**Hierarchy Level** [edit [chassis interconnect-device](#)]

**Release Information** Statement introduced in Junos Release 11.3 for the QFX Series.

**Description** Disable the physical operation of the craft interface front panel.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- *Configuring the Junos OS to Disable the Physical Operation of the Craft Interface*

## description (Interfaces)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>description text;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | <code>[edit <b>interfaces</b> interface-name],</code><br><code>[edit <b>interfaces</b> interface-name unit logical-unit-number],</code><br><code>[edit logical-systems logical-system-name interfaces interface-name unit logical-unit-number]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b>              | <p>Provide a textual description of the interface or the logical unit. Any descriptive text you include is displayed in the output of the <b>show interfaces</b> commands, and is also exposed in the <b>ifAlias</b> Management Information Base (MIB) object. It has no effect on the operation of the interface on the router or switch.</p> <p>The textual description can also be included in the extended DHCP relay option 82 Agent Circuit ID suboption.</p>                                                                                                                                                                                                                                                     |
| <b>Options</b>                  | <b>text</b> —Text to describe the interface. If the text includes spaces, enclose the entire text in quotation marks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Configuring Interface Description</i></li> <li>• <i>Adding a Logical Unit Description to the Configuration</i></li> <li>• <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i></li> <li>• <i>Configuring Gigabit and 10-Gigabit Ethernet Interfaces</i></li> <li>• <i>Configuring Gigabit Ethernet Interfaces (CLI Procedure)</i></li> <li>• <a href="#">Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41</a></li> <li>• <i>Using DHCP Relay Agent Option 82 Information</i></li> <li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li> <li>• <i>Example: Connecting Access Switches to a Distribution Switch</i></li> </ul> |

## device-count

---

|                                 |                                                                                                                                                                                                                                             |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>device-count <i>number</i>;</code>                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | [edit <a href="#">chassis aggregated-devices ethernet</a> ],<br>[edit <a href="#">chassis node-group <i>name</i> aggregated-devices ethernet</a> ]                                                                                          |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                               |
| <b>Description</b>              | Configure the number of aggregated Ethernet logical devices available to the switch.                                                                                                                                                        |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Link Aggregation on page 77</a></li><li>• <a href="#">Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79</a></li></ul> |

## disk-failure-action

---

|                                 |                                                                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>disk-failure-action (halt   reboot);</code>                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | [edit <a href="#">chassis routing-engine on-disk-failure</a> ],<br>[edit <a href="#">chassis <i>node-group name</i> routing-engine on-disk-failure</a> ],<br>[edit <a href="#">chassis <i>interconnect-device name</i> routing-engine on-disk-failure</a> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                           |
| <b>Description</b>              | Halt or reboot when the Routing Engine hard disk fails.                                                                                                                                                                                                     |
| <b>Options</b>                  | <b>halt</b> —Stop the Routing Engine.<br><b>reboot</b> —Reboot the Routing Engine.                                                                                                                                                                          |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring the Junos OS to Enable a Routing Engine to Reboot on Hard Disk Errors</a></li></ul>                                                                                                         |

## ethernet

|                                 |                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | ethernet {<br>device-count <i>number</i> ;<br>}                                                                                                                                       |
| <b>Hierarchy Level</b>          | [edit chassis aggregated-devices],<br>[edit chassis node-group aggregated-devices]                                                                                                    |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                         |
| <b>Description</b>              | Configure properties for aggregated Ethernet devices on the switch.<br><br>The remaining statement is explained separately.                                                           |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring Link Aggregation on page 77</a></li> <li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li> </ul> |

## ethernet (Alarm)

|                                 |                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | ethernet {<br>link-down (red   yellow   ignore);<br>}                                                                                         |
| <b>Hierarchy Level</b>          | [edit chassis alarm],<br>[edit chassis interconnect-device <i>name</i> alarm],<br>[edit chassis node-group <i>name</i> alarm]                 |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series. |
| <b>Description</b>              | Configure alarms for an Ethernet interface.                                                                                                   |
| <b>Options</b>                  | The remaining statement is explained separately.—                                                                                             |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Understanding Alarms</i></li> <li>• <i>Interface Alarm Messages</i></li> </ul>                    |

## ethernet-switching

---

**Syntax** ethernet-switching {  
    filter input *filter-name*;  
    filter output *filter-name*;  
    native-vlan-id *vlan-id*;  
    port-mode *mode*;  
    reflective-relay;  
    vlan {  
        members [ (all | *names* | *vlan-ids*) ];  
    }  
}

**Hierarchy Level** [edit [interfaces](#) ge-chassis/slot/port [unit](#) *logical-unit-number*] family

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.

**Description** Configure Ethernet switching protocol family information for the logical interface.  
  
The remaining statements are explained separately.

**Default** You must configure a logical interface to be able to use the physical device.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)
- [JUNOS Software Network Interfaces Configuration Guide](#)

## ether-options

**Syntax** The **auto-negotiation** and **speed** statements are not supported on the OCX Series.

```
ether-options {
 802.3ad aex {
 lacp {
 force-up;
 (primary | backup);
 }
 }
 (auto-negotiation | no-auto-negotiation);
 configured-flow-control {
 rx-buffers (on | off);
 tx-buffers (on | off);
 }
 ethernet-switch-profile
 storm-control storm-control-profile;
}
(flow-control | no-flow-control);
link-mode mode;
(loopback | no-loopback);
speed (auto-negotiation | no-auto-negotiation);
}
```

**Hierarchy Level** [edit [interfaces](#) *interface-name*]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Configure **ether-options** properties for a Gigabit Ethernet or 10-Gigabit Ethernet interface.



**NOTE:** The **auto-negotiation** and **speed** statements are not supported on the OCX Series.

The statements are explained separately.

**Default** Enabled.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces on page 41](#)
- [Configuring Gigabit and 10-Gigabit Ethernet Interfaces](#)
- [Junos OS Network Interfaces Library for Routing Devices](#)

## eui-64

---

|                                 |                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | eui-64;                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> unit <i>number</i> family inet6 address <i>address</i> ]                                                                                                                                                                            |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.3 for EX Series switches.<br>Statement introduced in Junos OS Release 12.2 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series. |
| <b>Description</b>              | For interfaces that carry IP version 6 (IPv6) traffic, automatically generate the host number portion of interface addresses.                                                                                                                                              |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring the Interface Address on page 45</a></li></ul>                                                                                                                                                             |



## fpc


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>fpc slot {   pic <i>pic-number</i> {     fibre-channel {       port-range {         <i>port-range-low port-range-high</i>;       }     }     tunnel-port <i>port-number</i> tunnel-services;     fte {       port <i>port-number</i>;       (<i>port-range port-range-low   port-range-high</i>);     }     xe {       (<i>port port-number   port-range port-range-low port-range-high</i>);     }     xle {       (<i>port port-number   port-range port-range-low port-range-high</i>);     }   } }</pre> |
| <b>Hierarchy Level</b>          | <p>[edit chassis],<br/>[edit chassis <i>interconnect-device name</i>]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | <p>Configure the FPC slot number. For QFX3500, QFX3600, and QFX5100 switches, the slot is a line card slot.</p> <p>For generic routing encapsulation (GRE) tunneling, use the <b>tunnel-port</b> statement to specify the port that you want to convert to a GRE tunnel port.</p>                                                                                                                                                                                                                                 |
| <b>Options</b>                  | <p><b>slot</b>—Number of the FPC slot. For QFX3500, QFX3600, and QFX5100 devices, the slot number is always 0.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><i>show chassis fpc</i></li> <li><i>Configuring Generic Routing Encapsulation Tunneling (CLI Procedure)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                     |

## fpc (Interconnect Device)

---

|                                 |                                                                                                                                                   |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>fpc slot {<br/>    power (on   off);<br/>}</code>                                                                                           |
| <b>Hierarchy Level</b>          | [edit chassis]<br>[edit chassis <a href="#">interconnect-device</a> ]                                                                             |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                 |
| <b>Description</b>              | Configure the FPC slot number.                                                                                                                    |
| <b>Options</b>                  | <b>slot</b> —Number of the FPC slot. For QFX3500 switches, the slot number is always 0.<br><br>The remaining statements are explained separately. |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                           |
| <b>Related Documentation</b>    |                                                                                                                                                   |

## fte (Port)

|                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                   | <pre>fte {   (port <i>port-number</i>   port-range <i>port-range-low</i> <i>port-range-high</i>); }</pre>                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                          | [edit <b>chassis</b> <b>fpc</b> <b>slot</b> <b>pic</b> <i>pic-number</i> ]                                                                                                                                                                                                                                                                                  |
| <b>Release Information</b>                                                                                                                                                                                                                                                                      | Statement introduced in Junos OS Release 13.2X52-D10 for the QFX Series.                                                                                                                                                                                                                                                                                    |
| <b>Description</b>                                                                                                                                                                                                                                                                              | Configure a specific port or a range of ports to operate as 40-Gigabit Ethernet data plane uplink ( <i>fte</i> ) type ports.                                                                                                                                                                                                                                |
| <div>  <p><b>CAUTION:</b> The Packet Forwarding Engine on the switch is restarted when you commit the port type configuration changes. As a result, you might experience packet loss on the switch.</p> </div> |                                                                                                                                                                                                                                                                                                                                                             |
| <b>Options</b>                                                                                                                                                                                                                                                                                  | <p><b><i>port-number</i></b>—Port number on which you want to configure the port type. Valid values are 2 through 7.</p> <p><b><i>port-range-low</i></b>—Lowest-numbered port in the range of ports. The lowest possible value is 2.</p> <p><b><i>port-range-high</i></b>—Highest-numbered port in the range of ports. The highest possible value is 7.</p> |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                 | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                              |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring the QSFP+ Port Type on QFX3500 Standalone Switches on page 54</a></li> <li>• <a href="#">Configuring the Port Type on QFX3600 Standalone Switches on page 52</a></li> <li>• <a href="#">Configuring the QSFP+ Port Type on QFX5100 Devices on page 56</a></li> </ul>                       |

## interconnect-device (Chassis)

---

```
Syntax interconnect-device {
 alarm {
 (ethernet | management-ethernet) {
 link-down (red | yellow | ignore);
 }
 }
 container-devices {
 device-count number;
 }
 craft-lockout {
 alarm {
 interface-type {
 link-down (red | yellow | ignore);
 }
 }
 container-devices {
 device-count number;
 }
 fpc slot {
 power (on | off);
 }
 routing-engine {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 }
 }
 fpc slot {
 power (on | off);
 }
 routing-engine {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 }
 }
```

**Hierarchy Level** [edit chassis]

**Release Information** Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Configure properties specific to a QFabric system Interconnect device.

The remaining statements are explained separately.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- *Understanding Interconnect Devices*

## node-device (Chassis)

```
Syntax node-device name {
 fibre-channel {
 port-range {
 port-range-low port-range-high;
 }
 }
 pic pic-number {
 fte {
 port port-number;
 port-range port-range-low port-range-high;
 }
 xe {
 port port-number;
 port-range port-range-low port-range-high;
 }
 }
 }
```

**Hierarchy Level** [edit chassis [node-group](#)]

**Release Information** Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Configure properties specific to a Node device in a QFabric system.  
The remaining statements are explained separately.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Configuring Link Aggregation on page 77](#)

## node-group (Chassis)

```
Syntax node-group name {
 aggregated-devices {
 ethernet {
 device-count number;
 }
 }
 alarm {
 interface-type {
 link-down (ignore | red | yellow);
 }
 }
 container-devices {
 device-count number;
 }
 node-device name {
 fibre-channel {
 port-range {
 port-range-low port-range-high;
 }
 }
 }
 pic pic-number {
 fte {
 port port-number;
 port-range port-range-low port-range-high;
 }
 xe {
 port port-number;
 port-range port-range-low port-range-high;
 }
 }
 routing-engine {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 }
 }
```

**Hierarchy Level** [edit chassis]

**Release Information** Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Configure properties specific to a Node group.

The remaining statements are explained separately.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Configuring Link Aggregation on page 77](#)

---

## on-disk-failure

---


|                                 |                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>on-disk-failure {<br/>    disk-failure-action (halt   reboot);<br/>}</code>                                                                                    |
| <b>Hierarchy Level</b>          | [edit chassis routing-engine],<br>[edit chassis <code>node-group name</code> routing-engine],<br>[edit chassis <code>interconnect-device name</code> routing-engine] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                    |
| <b>Description</b>              | Halt or reboot the switch if it detects hard disk errors on the Routing Engine.                                                                                      |
| <b>Options</b>                  | The remaining statement is explained separately.                                                                                                                     |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Enable a Routing Engine to Reboot on Hard Disk Errors</i></li></ul>                           |

## pic

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> pic <i>pic-number</i> {     fibre-channel {         port-range {             <i>port-range-low port-range-high</i>;         }     }     fte {         port <i>port-number</i>;         (<i>port-range port-range-low   port-range-high</i>);     }     <b>xe</b> {         (<i>port port-number   port-range port-range-low port-range-high</i>);     }     <b>xle</b> {         (<i>port port-number   port-range port-range-low port-range-high</i>);     } } </pre>                                                                              |
| <b>Hierarchy Level</b>          | <p>[edit <b>chassis</b> <b>fpc</b> <i>slot</i>]</p> <p>[edit <b>chassis</b> <b>node-group</b> <i>name</i> <b>node-device</b> <i>name</i>]</p>                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Options <b>xe</b> and <b>xle</b> introduced in Junos OS 12.2X50-D20 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b>              | <p>Enable the specified port on the Physical Interface Card (PIC) to perform in the specified operating mode.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Options</b>                  | <p><b>pic-number</b>—Number of the PIC.</p> <ul style="list-style-type: none"> <li>On a QFX3500 switch, specify <b>0</b> if the port type is <b>fiber-channel</b>, and <b>2</b> if the port type is <b>xle</b>.</li> <li>On a QFX3600 switch, specify <b>0</b> if the port type is <b>xe</b>, and <b>1</b> if the port type is <b>xle</b>.</li> <li>On a QFX5100 switch, specify <b>0</b> if the port type is <b>xe</b>, and <b>1</b> if the port type is <b>xle</b> and <b>fte</b>.</li> </ul> <p>The remaining statements are explained separately.</p> |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><a href="#">Configuring the QSFP+ Port Type on QFX3500 Standalone Switches on page 54</a></li> <li><a href="#">Configuring the Port Type on QFX3600 Standalone Switches on page 52</a></li> <li><a href="#">Configuring the QSFP+ Port Type on QFX5100 Devices on page 56</a></li> </ul>                                                                                                                                                                                                                           |



## port-mode



|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | port-mode (access   tagged-access   trunk);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">unit</a> <i>logical-unit-number</i> family <a href="#">ethernet-switching</a> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | <div>  <p><b>NOTE:</b> This statement does not support the Enhanced Layer 2 Software (ELS) configuration style. If your switch runs software that supports ELS, see <a href="#">interface-mode</a>. For ELS details, see <i>Getting Started with Enhanced Layer 2 Software</i>.</p> </div> <p>Configure whether an interface on the switch operates in access, tagged access, or trunk mode.</p>                                                                                                                                                                                                                                                                      |
| <b>Default</b>                  | All switch interfaces are in access mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Options</b>                  | <p><b>access</b>—Have the interface operate in access mode. In this mode, the interface can be in a single VLAN only. Access interfaces typically connect to network devices, such as PCs, printers, IP telephones, and IP cameras.</p> <p><b>tagged-access</b>—Have the interface operate in tagged-access mode. In this mode, the interface can be in multiple VLANs. Tagged access interfaces typically connect to network devices, such as PCs, printers, IP telephones, and IP cameras.</p> <p><b>trunk</b>—Have the interface operate in trunk mode. In this mode, the interface can be in multiple VLANs and can multiplex traffic between different VLANs. Trunk interfaces typically connect to other switches and to routers on the LAN.</p> |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><i>Configuring Reflective Relay</i></li> <li><i>Example: Configuring Reflective Relay for Use with VEPA Technology</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## routing-engine

---

|                                 |                                                                                                                                                                                                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>routing-engine {<br/>  on-disk-failure {<br/>    disk-failure-action (halt   reboot);<br/>  }<br/>}</pre>                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | <pre>[edit chassis]<br/>[edit chassis <b>interconnect-device</b> <i>name</i>],<br/>[edit chassis <b>node-group</b> <i>name</i>]</pre>                                                                                                                                                            |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                                                                |
| <b>Description</b>              | Configure a Routing Engine to halt or reboot automatically when a hard disk error occurs. A hard disk error may cause a Routing Engine to enter a state in which it responds to local pings and interfaces remain up, but no other processes are responding. Rebooting or halting prevents this. |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Enable a Routing Engine to Reboot on Hard Disk Errors</i></li><li>• <i>Junos OS High Availability Library for Routing Devices</i></li></ul>                                                                               |

## xe (Port)

|                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                       | <pre>xe {   (port <i>port-number</i>   port-range <i>port-range-low</i> <i>port-range-high</i>); }</pre>                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                              | [edit <b>chassis fpc slot pic pic-number</b> ]                                                                                                                                                                                                                                                                                                                |
| <b>Release Information</b>                                                                                                                                                                                                                                                                          | Statement introduced in Junos OS Release 12.2X50-D20 for the QFX Series.                                                                                                                                                                                                                                                                                      |
| <b>Description</b>                                                                                                                                                                                                                                                                                  | (QFX3600 standalone switch only) Configure a specific port or a range of ports to operate as four 10-Gigabit Ethernet (xe) type ports.                                                                                                                                                                                                                        |
| <div>  <p><b>CAUTION:</b> The Packet Forwarding Engine on the switch is restarted when you commit the port type configuration changes. As a result, you might experience packet loss on the switch.</p> </div>     |                                                                                                                                                                                                                                                                                                                                                               |
| <div>  <p><b>NOTE:</b> Port Q0 supports only three (not the typical four) 10-Gigabit Ethernet ports. Therefore, you can configure up to 63 (not 64) 10-Gigabit Ethernet ports on ports Q0 through Q15.</p> </div> |                                                                                                                                                                                                                                                                                                                                                               |
| <b>Options</b>                                                                                                                                                                                                                                                                                      | <p><b><i>port-number</i></b>—Port number on which you want to configure the port type. Valid values are 0 through 15.</p> <p><b><i>port-range-low</i></b>—Lowest-numbered port in the range of ports. The lowest possible value is 0.</p> <p><b><i>port-range-high</i></b>—Highest-numbered port in the range of ports. The highest possible value is 15.</p> |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                     | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• <a href="#">Configuring the Port Type on QFX3600 Standalone Switches on page 52</a></li> </ul>                                                                                                                                                                                                                       |

## xle (Port)

---

|                            |                                                                                                                                                                       |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>xle {<br/>    (port <i>port-number</i>   port-range <i>port-range-low</i> <i>port-range-high</i>);<br/>}</code>                                                 |
| <b>Hierarchy Level</b>     | [edit <code>chassis fpc slot pic pic-number</code> ]                                                                                                                  |
| <b>Release Information</b> | Statement introduced in Junos OS Release 12.2X50-D20 for the QFX Series.                                                                                              |
| <b>Description</b>         | (QFX3500 and QFX3600 standalone switches only) Configure a specific QSFP+ port or a range of QSFP+ ports to operate as 40-Gigabit Ethernet ( <i>xle</i> ) type ports. |



**CAUTION:** The Packet Forwarding Engine on the switch is restarted when you commit the port type configuration changes. As a result, you might experience packet loss on the switch.

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Options</b>                  | <p><b><i>port-number</i></b>—Port number on which you want to configure the port type. On a QFX3500 standalone switch, specify a value from 0 through 3. On a QFX3600 standalone switch, specify a value from 0 through 15.</p> <p><b><i>port-range-low</i></b>—Lowest-numbered port in the range of ports. The lowest possible value is 0.</p> <p><b><i>port-range-high</i></b>—Highest-numbered port in the range of ports. The highest possible value is 3 on QFX3500 standalone switches, and 15 on QFX3600 standalone switches.</p> |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring the QSFP+ Port Type on QFX3500 Standalone Switches on page 54</a></li><li>• <a href="#">Configuring the Port Type on QFX3600 Standalone Switches on page 52</a></li></ul>                                                                                                                                                                                                                                                                                                |

## CHAPTER 5

# IP Directed Broadcast Configuration Statement

- [targeted-broadcast](#) on page 181

### targeted-broadcast

---

|                                 |                                                                                                                                                                                                                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | targeted-broadcast;                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">unit</a> <i>logical-unit-number</i> family inet],<br>[edit <a href="#">interfaces</a> <a href="#">interface-range</a> <i>interface-range-name</i> <a href="#">unit</a> <i>logical-unit-number</i> family inet] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                     |
| <b>Description</b>              | Specify whether the IP packets destined for a Layer 3 broadcast need to be forwarded to both an egress interface and the Routing Engine, or to an egress interface only. The packets are broadcast only if the egress interface is a LAN interface.                               |
| <b>Default</b>                  | When this statement is not included, broadcast packets are sent to the Routing Engine only.                                                                                                                                                                                       |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Configuring IP Directed Broadcast on an EX Series Switch</i></li><li>• <i>Configuring IP Directed Broadcast (CLI Procedure)</i></li><li>• <i>Understanding IP Directed Broadcast for EX Series Switches</i></li></ul>         |



## CHAPTER 6

# LAGs and LACP Configuration Statements

- [aggregated-devices on page 184](#)
- [aggregated-ether-options on page 185](#)
- [chassis on page 187](#)
- [802.3ad on page 188](#)
- [device-count on page 189](#)
- [ethernet on page 189](#)
- [force-up on page 190](#)
- [lacp \(802.3ad\) on page 191](#)
- [lacp \(Aggregated Ethernet\) on page 192](#)
- [periodic on page 192](#)

## aggregated-devices

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>aggregated-devices {<br/>    ethernet {<br/>        device-count <i>number</i>;<br/>    }<br/>}</pre>                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>          | [edit <i>chassis</i> ],<br>[edit <i>chassis node-group name</i> ]                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                   |
| <b>Description</b>              | Configure properties for aggregated devices on the switch.<br><br>The remaining statements are explained separately.                                                                                                                                                                                                                                                                                            |
| <b>Default</b>                  | Aggregated devices are disabled.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Understanding Aggregated Ethernet Interfaces and LACP on page 73</a></li><li>• <a href="#">Configuring Link Aggregation on page 77</a></li><li>• <a href="#">Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79</a></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul> |



## aggregated-ether-options

**Syntax** The **fcoe-lag** and **mc-ae** statements are not supported on OCX Series switches.

```
aggregated-ether-options {
 configured-flow-control {
 rx-buffers (on | off);
 tx-buffers (on | off);
 }
 ethernet-switch-profile {
 tag-protocol-id;
 (fcoe-lag | no-fcoe-lag);
 (flow-control | no-flow-control);
 lacp mode {
 admin-key key;
 periodic interval;
 system-id mac-address;
 force-up;
 }
 }
 (link-protection | no-link-protection);
 link-speed speed;
 local-bias (edit interfaces ae);
 (loopback | no-loopback);
 mc-ae {
 chassis-id chassis-id;
 mc-ae-id mc-ae-id;
 mode (active-active);
 status-control (active | standby);
 }
 minimum-links number;
 rebalance-periodic;
 resilient-hash;
 source-address-filter filter;
 (source-filtering | no-source-filtering);
}
```

**Hierarchy Level** [edit **interfaces** aex]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statements **fcoe-lag** and **no-fcoe-lag** introduced in Junos OS Release 13.2X52-D10 for the QFX Series.  
Statements **force-up**, **lacp**, and **resilient-hash** introduced in Junos OS Release 14.1X53-D10 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Configure properties specific to a specific aggregated Ethernet interface.



**NOTE:** The **fcoe-lag** and **mc-ae** statements are not supported on OCX Series switches.

The statements are explained separately.

**Default** Options are not enabled.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Understanding Aggregated Ethernet Interfaces and LACP on page 73](#)
- [Configuring Aggregated Ethernet LACP on page 76](#)
- [Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch on page 84](#)
- *Junos OS Network Interfaces Library for Routing Devices*

## chassis

```
Syntax chassis {
 routing-engine {
 redundancy {
 failover {
 on-disk-failure {
 disk-failure-action (halt | reboot);
 }
 on-loss-of-keepalives;
 }
 graceful-switchover;
 }
 aggregated-devices {
 ethernet {
 device-count number;
 }
 alarm {
 interface-type {
 alarm-name (red | yellow | ignore);
 }
 }
 }
 forwarding-options profile-name {
 num-65-127-prefix value
 }
 fpc slot {
 auto-speed-detection disable
 pic pic-number{
 port port-number{
 tunnel-port port-number tunnel-services;
 channel-speed speed;
 }
 port-range port-range-low port-range-high {
 channel-speed speed;
 }
 }
 }
 maximum-ecmp next-hops;
 }
```

**Hierarchy Level** [edit]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Configure chassis-specific properties for the switch.  
  
The remaining statements are explained separately.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

- Related Documentation**
- [Configuring Link Aggregation on page 77](#)

## 802.3ad

---

**Syntax**

```
802.3ad aex;
 lacp {
 force-up;
 (primary | backup);
 }
 port-priority;
}
```

**Hierarchy Level** [edit [interfaces](#) *interface-name* [ether-options](#)]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Specify the aggregated Ethernet logical interface number.



**NOTE:** The port-priority statement is not supported on QFabric systems.

---

**Options** **aex**—Aggregated Ethernet logical interface number.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

- Related Documentation**
- [Configuring Link Aggregation on page 77](#)
  - [Configuring Aggregated Ethernet LACP on page 76](#)
  - [Understanding Aggregated Ethernet Interfaces and LACP on page 73](#)
  - [Troubleshooting an Aggregated Ethernet Interface on page 89](#)
  - *Junos OS Network Interfaces Library for Routing Devices*

## device-count

---

|                                 |                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>device-count <i>number</i>;</code>                                                                                                                                                                                                       |
| <b>Hierarchy Level</b>          | [edit <a href="#">chassis aggregated-devices ethernet</a> ],<br>[edit <a href="#">chassis node-group <i>name</i> aggregated-devices ethernet</a> ]                                                                                             |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                  |
| <b>Description</b>              | Configure the number of aggregated Ethernet logical devices available to the switch.                                                                                                                                                           |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring Link Aggregation on page 77</a></li> <li>• <a href="#">Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79</a></li> </ul> |

## ethernet

---

|                                 |                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>ethernet {<br/>    <a href="#">device-count <i>number</i></a>;<br/>}</code>                                                                                                              |
| <b>Hierarchy Level</b>          | [edit <a href="#">chassis aggregated-devices</a> ],<br>[edit <a href="#">chassis node-group aggregated-devices</a> ]                                                                           |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                  |
| <b>Description</b>              | Configure properties for aggregated Ethernet devices on the switch.<br><br>The remaining statement is explained separately.                                                                    |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring Link Aggregation on page 77</a></li> <li>• <a href="#">Junos OS Network Interfaces Library for Routing Devices</a></li> </ul> |

## force-up

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | force-up;                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">ether-options</a> 802.3ad lacp;<br>[edit <a href="#">interfaces</a> <i>interface-name</i> <a href="#">aggregated-ether-options</a> lacp;                                                                                                                                                                                                                                           |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | Configure the state of the interface as up when the peer has limited LACP capability. You can also configure the peer interface (in MC-LAG) to remain up even with limited LACP capability.                                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Understanding Aggregated Ethernet Interfaces and LACP on page 73</a></li><li>• <a href="#">Configuring Aggregated Ethernet LACP on page 76</a></li><li>• <a href="#">Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch on page 84</a></li><li>• <a href="#">Junos OS Network Interfaces Library for Routing Devices</a></li><li>• </li></ul> |

## lacp (802.3ad)

---

**Syntax** `lacp {  
    force-up;  
    (primary | backup);  
    port-priority;  
}`

**Hierarchy Level** [edit [interfaces interface-name ether-options 802.3ad](#)]

**Release Information** Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Configure the Link Aggregation Control Protocol (LACP) parameters for interfaces. The remaining statement is explained separately.



**NOTE:** The port-priority statement is not supported on QFabric systems.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**Related Documentation**

- [Configuring Link Aggregation on page 77](#)
- [Configuring Aggregated Ethernet LACP on page 76](#)
- [Understanding Aggregated Ethernet Interfaces and LACP on page 73](#)

## lACP (Aggregated Ethernet)

---

|                                 |                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>lACP (active   passive) {<br/>    admin-key <i>key</i>;<br/>    periodic <i>interval</i><br/>    system-ID <i>mac-address</i>;<br/>    force-up;<br/>}</code>                                                                                                            |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces interface-name</a> <a href="#">aggregated-ether-options</a> ]                                                                                                                                                                                     |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                  |
| <b>Description</b>              | Configure the Link Aggregation Control Protocol (LACP) parameters for interfaces. The remaining statement is explained separately.                                                                                                                                             |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Link Aggregation on page 77</a></li><li>• <a href="#">Configuring Aggregated Ethernet LACP on page 76</a></li><li>• <a href="#">Understanding Aggregated Ethernet Interfaces and LACP on page 73</a></li></ul> |

## periodic

---

|                                 |                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>periodic (fast   slow);</code>                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | [edit <a href="#">interfaces aex</a> <a href="#">aggregated-ether-options lACP</a> ]                                                                                                                                                               |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.1 for the QFX Series.<br>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                      |
| <b>Description</b>              | Configure the interval for periodic transmission of LACP packets.                                                                                                                                                                                  |
| <b>Default</b>                  | <b>fast</b>                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <b>interval</b> —Interval at which to periodically transmit LACP packets: <ul style="list-style-type: none"><li>• <b>fast</b>—Receive packets every second. This is the default.</li><li>• <b>slow</b>—Receive packets every 30 seconds.</li></ul> |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Understanding Aggregated Ethernet Interfaces and LACP on page 73</a></li><li>• <i>Junos OS Network Interfaces Library for Routing Devices</i></li></ul>                                        |



## CHAPTER 7

# Interfaces Operational Commands

- `monitor interface`
- `show interfaces diagnostics optics`
- `show interfaces ge`
- `show interfaces (GRE)`
- `show interfaces irb`
- `show interfaces queue`
- `show interfaces xe`
- `show interfaces fabric`
- `show interfaces statistics fabric`
- `show interfaces queue fabric`
- `show interfaces xle`

## monitor interface

**Syntax** `monitor interface`  
`<interface-name> | traffic <detail>`

**Release Information** Command introduced before Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
 Command introduced in Junos OS Release 11.1 for the QFX Series.  
 Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Display real-time statistics about interfaces, updating the statistics every second. Check for and display common interface failures, such as SONET/SDH and T3 alarms, loopbacks detected, and increases in framing errors.



**NOTE:** This command is not supported on the QFX3000 QFabric system.

**Options** **none**—Display real-time statistics for all interfaces.

**detail**—(Optional) With traffic option only, display detailed output.

**interface-name**—(Optional) Display real-time statistics for the specified interface. In a TX Matrix or TX Matrix Plus router, display real-time statistics for the physical interfaces on the specified line-card chassis (LCC) only.

**traffic**—(Optional) Display traffic data for all active interfaces. In a TX Matrix or TX Matrix Plus router, display real-time statistics for the physical interfaces on the specified LCC only.

**Additional Information** The output of this command shows how much each field has changed since you started the command or since you cleared the counters by pressing the **c** key. For a description of the statistical information provided in the output of this command, see the **show interfaces extensive** command for a particular interface type in the [CLI Explorer](#). To control the output of the **monitor interface** command while it is running, use the keys listed in [Table 19 on page 194](#). The keys are not case-sensitive.

**Table 19: Output Control Keys for the monitor interface Command**

| Key | Action                                                                                                                                                                                                                     |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| c   | Clears (returns to zero) the delta counters since <b>monitor interface</b> was started. This does not clear the accumulative counter. To clear the accumulative counter, use the <b>clear interfaces interval</b> command. |
| f   | Freezes the display, halting the display of updated statistics and delta counters.                                                                                                                                         |
| i   | Displays information about a different interface. The command prompts you for the name of a specific interface.                                                                                                            |

**Table 19: Output Control Keys for the monitor interface Command** (*continued*)

| Key      | Action                                                                                                                                                                                         |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| n        | Displays information about the next interface. The <b>monitor interface</b> command displays the physical or logical interfaces in the same order as the <b>show interfaces terse</b> command. |
| q or Esc | Quits the command and returns to the command prompt.                                                                                                                                           |
| t        | Thaws the display, resuming the update of the statistics and delta counters.                                                                                                                   |

To control the output of the **monitor interface traffic** command while it is running, use the keys listed in [Table 20 on page 195](#). The keys are not case-sensitive.

**Table 20: Output Control Keys for the monitor interface traffic Command**

| Key      | Action                                                                                                               |
|----------|----------------------------------------------------------------------------------------------------------------------|
| b        | Displays the statistics in units of bits and bits per second (bps).                                                  |
| c        | Clears (return to 0) the delta counters in the <b>Current Delta</b> column. The statistics counters are not cleared. |
| d        | Displays the <b>Current Delta</b> column (instead of the rate column) in Bps or packets per second (pps).            |
| p        | Displays the statistics in units of packets and packets per second (pps).                                            |
| q or Esc | Quits the command and returns to the command prompt.                                                                 |
| r        | Displays the rate column (instead of the <b>Current Delta</b> column) in Bps and pps.                                |

**Required Privilege Level** trace

**List of Sample Output** [monitor interface \(Physical\) on page 197](#)  
[monitor interface \(OTN Interface\) on page 198](#)  
[monitor interface \(MX2020 Routers with MPC6E and OTN MICInterface\) on page 199](#)  
[monitor interface \(Logical\) on page 200](#)  
[monitor interface \(QFX3500 Switch\) on page 200](#)  
[monitor interface traffic on page 201](#)  
[monitor interface traffic \(QFX3500 Switch\) on page 201](#)  
[monitor interface traffic detail \(QFX3500 Switch\) on page 202](#)

**Output Fields** [Table 21 on page 196](#) describes the output fields for the **monitor interface** command. Output fields are listed in the approximate order in which they appear.

Table 21: monitor interface Output Fields

| Field Name               | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Level of Output |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>routerl</b>           | Hostname of the router.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | All levels      |
| <b>Seconds</b>           | How long the monitor interface command has been running or how long since you last cleared the counters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All levels      |
| <b>Time</b>              | Current time (UTC).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | All levels      |
| <b>Delay x/y/z</b>       | Time difference between when the statistics were displayed and the actual clock time. <ul style="list-style-type: none"> <li>• <b>x</b>—Time taken for the last polling (in milliseconds).</li> <li>• <b>y</b>—Minimum time taken across all pollings (in milliseconds).</li> <li>• <b>z</b>—Maximum time taken across all pollings (in milliseconds).</li> </ul>                                                                                                                                                                                                                                                                                                                        | All levels      |
| <b>Interface</b>         | Short description of the interface, including its name, status, and encapsulation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | All levels      |
| <b>Link</b>              | State of the link: <b>Up</b> , <b>Down</b> , or <b>Test</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | All levels      |
| <b>Current delta</b>     | Cumulative number for the counter in question since the time shown in the Seconds field, which is the time since you started the command or last cleared the counters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | All levels      |
| <b>Local Statistics</b>  | (Logical interfaces only) Number and rate of bytes and packets destined to the router or switch through the specified interface. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It usually takes less than 1 second for this counter to stabilize. <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul> | All levels      |
| <b>Remote Statistics</b> | (Logical interfaces only) Statistics for traffic transiting the router or switch. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It usually takes less than 1 second for this counter to stabilize. <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul>                                                | All levels      |

Table 21: monitor interface Output Fields (*continued*)

| Field Name         | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Level of Output |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Traffic statistics | <p>Total number of bytes and packets received and transmitted on the interface. These statistics are the sum of the local and remote statistics. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It usually takes less than 1 second for this counter to stabilize.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul> | All levels      |
| Description        | With the <b>traffic</b> option, displays the interface description configured at the <b>[edit interfaces <i>interface-name</i>]</b> hierarchy level.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | detail          |

## Sample Output

### monitor interface (Physical)

```

user@host> monitor interface so-0/0/0
router1 Seconds: 19 Time: 15:46:29

Interface: so-0/0/0, Enabled, Link is Up
Encapsulation: PPP, Keepalives, Speed: 0C48
Traffic statistics:
 Input packets: 6045 (0 pps)
 Input bytes: 6290065 (0 bps)
 Output packets: 10376 (0 pps)
 Output bytes: 10365540 (0 bps)
Encapsulation statistics:
 Input keepalives: 1901
 Output keepalives: 1901
 NCP state: Opened
 LCP state: Opened
Error statistics:
 Input errors: 0
 Input drops: 0
 Input framing errors: 0
 Policed discards: 0
 L3 incompletes: 0
 L2 channel errors: 0
 L2 mismatch timeouts: 0
 Carrier transitions: 1
 Output errors: 0
 Output drops: 0
 Aged packets: 0
Active alarms : None
Active defects: None
SONET error counts/seconds:
 LOS count 1
 LOF count 1
 SEF count 1
 ES-S 0
 SES-S 0
SONET statistics:
 BIP-B1 458871

```

```

BIP-B2 460072 [0]
REI-L 465610 [0]
BIP-B3 458978 [0]
REI-P 458773 [0]

```

## Received SONET overhead:

```

F1 : 0x00 J0 : 0x00 K1 : 0x00
K2 : 0x00 S1 : 0x00 C2 : 0x00
C2(cmp) : 0x00 F2 : 0x00 Z3 : 0x00
Z4 : 0x00 S1(cmp) : 0x00

```

## Transmitted SONET overhead:

```

F1 : 0x00 J0 : 0x01 K1 : 0x00
K2 : 0x00 S1 : 0x00 C2 : 0xcf
F2 : 0x00 Z3 : 0x00 Z4 : 0x00

```

Next='n', Quit='q' or ESC, Freeze='f', Thaw='t', Clear='c', Interface='i'

## monitor interface (OTN Interface)

```
user@host> monitor interface ge-7/0/0
```

```

Interface: ge-7/0/0, Enabled, Link is Up
Encapsulation: Ethernet, Speed: 10000mbps
Traffic statistics:
 Input bytes: 0 (0 bps)
 Output bytes: 0 (0 bps)
 Input packets: 0 (0 pps)
 Output packets: 0 (0 pps)
Error statistics:
 Input errors: 0
 Input drops: 0
 Input framing errors: 0
 Policed discards: 0
 L3 incompletes: 0
 L2 channel errors: 0
 L2 mismatch timeouts: 0
 Carrier transitions: 5
 Output errors: 0
 Output drops: 0
 Aged packets: 0
Active alarms : None
Active defects: None
Input MAC/Filter statistics:
 Unicast packets 0
 Broadcast packets 0
 Multicast packets 0
 Oversized frames 0
 Packet reject count 0
 DA rejects 0
 SA rejects 0
Output MAC/Filter Statistics:
 Unicast packets 0
 Broadcast packets 0
 Multicast packets 0
 Packet pad count 0
 Packet error count 0
OTN Link 0
 OTN Alarms: OTU_BDI, OTU_TTIM, ODU_BDI
 OTN Defects: OTU_BDI, OTU_TTIM, ODU_BDI, ODU_TTIM
 OTN OC - Seconds
 LOS 2

```

```

 LOF 9
OTN OTU - FEC Statistics
 Corr err ratio N/A
 Corr bytes 0
 Uncorr words 0
OTN OTU - Counters
 BIP 0
 BBE 0
 ES 0
 SES 0
 UAS 422
OTN ODU - Counters
 BIP 0
 BBE 0
 ES 0
 SES 0
 UAS 422
OTN ODU - Received Overhead APSGCC 0-3: 0

```

### monitor interface (MX2020 Routers with MPC6E and OTN MICInterface)

```

user@host> monitor interface xe-3/0/0
host name Seconds: 67 Time: 23:46:46
 Delay: 0/0/13

Interface: xe-3/0/0, Enabled, Link is Up
Encapsulation: Ethernet, Speed: 10000mbps
Traffic statistics: Current delta
 Input bytes: 0 (0 bps) [0]
 Output bytes: 0 (0 bps) [0]
 Input packets: 0 (0 pps) [0]
 Output packets: 0 (0 pps) [0]
Error statistics:
 Input errors: 0 [0]
 Input drops: 0 [0]
 Input framing errors: 0 [0]
 Policed discards: 0 [0]
 L3 incompletes: 0 [0]
 L2 channel errors: 0 [0]
 L2 mismatch timeouts: 0 [0]
 Carrier transitions: 3 [0]
 Output errors: 0 [0]
 Output drops: 0 [0]
 Aged packets: 0 [0]
OTN Link 0
OTN Alarms:
OTN Defects:
OTN OC - Seconds
 LOS 0 [0]
 LOF 0 [0]
OTN OTU - FEC Statistics
 Corr err ratio N/A
 Corr bytes 0 [0]
 Uncorr words 0 [0]
OTN OTU - Counters
 BIP 0 [0]
 BBE 0 [0]
 ES 0 [0]
 SES 0 [0]
 UAS 0 [0]
OTN ODU - Counters
 BIP 0

```

```

BBE 0 [0]
ES 0 [0]
SES 0 [0]
UAS 0 [0]
OTN ODU - Received Overhead [0]
APSPCC 0-3: 00 00 00 00

```

Next='n', Quit='q' or ESC, Freeze='f', Thaw='t', Clear='c', Interface='i'

### monitor interface (Logical)

```

user@host> monitor interface so-1/0/0.0
host name Seconds: 16 Time: 15:33:39
 Delay: 0/0/1

Interface: so-1/0/0.0, Enabled, Link is Down
Flags: Hardware-Down Point-To-Point SNMP-Traps
Encapsulation: PPP
Local statistics:
Input bytes: 0 [0]
Output bytes: 0 [0]
Input packets: 0 [0]
Output packets: 0 [0]
Remote statistics:
Input bytes: 0 (0 bps) [0]
Output bytes: 0 (0 bps) [0]
Input packets: 0 (0 pps) [0]
Output packets: 0 (0 pps) [0]
Traffic statistics:
Destination address: 192.168.8.193, Local: 192.168.8.21

Next='n', Quit='q' or ESC, Freeze='f', Thaw='t', Clear='c', Interface='i'

```

### monitor interface (QFX3500 Switch)

```

user@switch> monitor interface ge-0/0/0
Interface: ge-0/0/0, Enabled, Link is Down
Encapsulation: Ethernet, Speed: Unspecified
Traffic statistics:
Input bytes: 0 (0 bps) [0]
Output bytes: 0 (0 bps) [0]
Input packets: 0 (0 pps) [0]
Output packets: 0 (0 pps) [0]
Error statistics:
Input errors: 0 [0]
Input drops: 0 [0]
Input framing errors: 0 [0]
Policed discards: 0 [0]
L3 incompletes: 0 [0]
L2 channel errors: 0 [0]
L2 mismatch timeouts: 0 [0]
Carrier transitions: 0 [0]
Output errors: 0 [0]
Output drops: 0 [0]
Aged packets: 0 [0]
Active alarms : LINK
Active defects: LINK
Input MAC/Filter statistics:
Unicast packets 0 [0]
Broadcast packets 0 Multicast packet [0]

```



Interface warnings:  
 o Outstanding LINK alarm

### monitor interface traffic

```
user@host> monitor interface traffic
host name Seconds: 15 Time: 12:31:09
```

| Interface | Link | Input packets | (pps) | Output packets | (pps) |
|-----------|------|---------------|-------|----------------|-------|
| so-1/0/0  | Down | 0             | (0)   | 0              | (0)   |
| so-1/1/0  | Down | 0             | (0)   | 0              | (0)   |
| so-1/1/1  | Down | 0             | (0)   | 0              | (0)   |
| so-1/1/2  | Down | 0             | (0)   | 0              | (0)   |
| so-1/1/3  | Down | 0             | (0)   | 0              | (0)   |
| t3-1/2/0  | Down | 0             | (0)   | 0              | (0)   |
| t3-1/2/1  | Down | 0             | (0)   | 0              | (0)   |
| t3-1/2/2  | Down | 0             | (0)   | 0              | (0)   |
| t3-1/2/3  | Down | 0             | (0)   | 0              | (0)   |
| so-2/0/0  | Up   | 211035        | (1)   | 36778          | (0)   |
| so-2/0/1  | Up   | 192753        | (1)   | 36782          | (0)   |
| so-2/0/2  | Up   | 211020        | (1)   | 36779          | (0)   |
| so-2/0/3  | Up   | 211029        | (1)   | 36776          | (0)   |
| so-2/1/0  | Up   | 189378        | (1)   | 36349          | (0)   |
| so-2/1/1  | Down | 0             | (0)   | 18747          | (0)   |
| so-2/1/2  | Down | 0             | (0)   | 16078          | (0)   |
| so-2/1/3  | Up   | 0             | (0)   | 80338          | (0)   |
| at-2/3/0  | Up   | 0             | (0)   | 0              | (0)   |
| at-2/3/1  | Down | 0             | (0)   | 0              | (0)   |

Bytes=b, Clear=c, Delta=d, Packets=p, Quit=q or ESC, Rate=r, Up=^U, Down=^D

### monitor interface traffic (QFX3500 Switch)

```
user@switch> monitor interface traffic
switch Seconds: 7 Time: 16:04:37
```

| Interface | Link | Input packets | (pps) | Output packets | (pps) |
|-----------|------|---------------|-------|----------------|-------|
| ge-0/0/0  | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/1  | Up   | 392187        | (0)   | 392170         | (0)   |
| ge-0/0/2  | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/3  | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/4  | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/5  | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/6  | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/7  | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/8  | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/9  | Up   | 392184        | (0)   | 392171         | (0)   |
| ge-0/0/10 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/11 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/12 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/13 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/14 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/15 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/16 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/17 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/18 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/19 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/20 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/21 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/22 | Up   | 392172        | (0)   | 392187         | (0)   |
| ge-0/0/23 | Up   | 392185        | (0)   | 392173         | (0)   |

|       |      |   |     |         |     |
|-------|------|---|-----|---------|-----|
| vcp-0 | Down | 0 |     | 0       |     |
| vcp-1 | Down | 0 |     | 0       |     |
| ae0   | Down | 0 | (0) | 0       | (0) |
| bme0  | Up   | 0 |     | 1568706 |     |

### monitor interface traffic detail (QFX3500 Switch)

user@switch> monitor interface traffic detail  
switch

Seconds: 74

Time: 16:03:02

| Interface<br>Description | Link | Input packets | (pps) | Output packets | (pps) |
|--------------------------|------|---------------|-------|----------------|-------|
| ge-0/0/0                 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/1                 | Up   | 392183        | (0)   | 392166         | (0)   |
| ge-0/0/2                 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/3                 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/4                 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/5                 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/6                 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/7                 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/8                 | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/9                 | Up   | 392181        | (0)   | 392168         | (0)   |
| ge-0/0/10                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/11                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/12                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/13                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/14                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/15                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/16                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/17                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/18                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/19                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/20                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/21                | Down | 0             | (0)   | 0              | (0)   |
| ge-0/0/22                | Up   | 392169        | (0)   | 392184         | (1)   |
| ge-0/0/23                | Up   | 392182        | (0)   | 392170         | (0)   |
| vcp-0                    | Down | 0             |       | 0              |       |
| vcp-1                    | Down | 0             |       | 0              |       |
| ae0                      | Down | 0             | (0)   | 0              | (0)   |
| bme0                     | Up   | 0             |       | 1568693        |       |

## show interfaces diagnostics optics

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>show interfaces diagnostics optics <i>interface-name</i></code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | <p>Command introduced in Junos OS Release 10.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 13.2X50-D15 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | <p>Display diagnostics data and alarms for Gigabit Ethernet optical transceivers (SFP, SFP+, XFP, QSFP+, or CFP) installed in EX Series or QFX Series switches. The information provided by this command is known as digital optical monitoring (DOM) information. For a list of transceivers supported on EX Series switches and their specifications, including DOM support, see <i>Pluggable Transceivers Supported on EX Series Switches</i>.</p> <p>Thresholds that trigger a high alarm, low alarm, high warning, or low warning are set by the transponder vendors. Generally, a high alarm or low alarm indicates that the optics module is not operating properly. This information can be used to diagnose why a transceiver is not working.</p> |
| <b>Options</b>                  | <i>interface-name</i> —Name of the interface associated with the port in which the transceiver is installed: <i>ge-fpc/pic/port</i> , <i>xe-fpc/pic/port</i> , or <i>et-fpc/pic/port</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Monitoring Interface Status and Traffic</i></li> <li>• <a href="#">Monitoring Interface Status and Traffic on page 60</a></li> <li>• <i>Installing a Transceiver in an EX Series Switch</i></li> <li>• <i>Installing a Transceiver in a QFX Series Device</i></li> <li>• <i>Removing a Transceiver from a Switch</i></li> <li>• <i>Removing a Transceiver from a QFX Series Device</i></li> <li>• <a href="#">Junos OS Ethernet Interfaces Configuration Guide</a></li> </ul>                                                                                                                                                                                                                                  |
| <b>List of Sample Output</b>    | <p><a href="#">show interfaces diagnostics optics ge-0/1/0 (SFP Transceiver) on page 210</a></p> <p><a href="#">show interfaces diagnostics optics xe-0/1/0 (SFP+ Transceiver) on page 211</a></p> <p><a href="#">show interfaces diagnostics optics xe-0/1/0 (XFP Transceiver) on page 212</a></p> <p><a href="#">show interfaces diagnostics optics et-3/0/0 (QSFP+ Transceiver) on page 213</a></p> <p><a href="#">show interfaces diagnostics optics et-4/1/0 (CFP Transceiver) on page 214</a></p>                                                                                                                                                                                                                                                    |
| <b>Output Fields</b>            | Table 22 on page 203 lists the output fields for the <b>show interfaces diagnostics optics</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

Table 22: show interfaces diagnostics optics Output Fields

| Field Name         | Field Description                            |
|--------------------|----------------------------------------------|
| Physical interface | Displays the name of the physical interface. |

Table 22: show interfaces diagnostics optics Output Fields (*continued*)

| Field Name                                                                                           | Field Description                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Laser bias current</b>                                                                            | Displays the magnitude of the laser bias power setting current, in milliamperes. The laser bias provides direct modulation of laser diodes and modulates currents. |
| <b>Laser output power</b><br>(Not available for QSFP+ transceivers)                                  | Displays the laser output power, in milliwatts (mW) and decibels referred to 1.0 mW (dBm).                                                                         |
| <b>Laser temperature</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)               | Displays the laser temperature, in Celsius and Fahrenheit.                                                                                                         |
| <b>Module temperature</b>                                                                            | Displays the temperature, in Celsius and Fahrenheit.                                                                                                               |
| <b>Module voltage</b><br>(Not available for XFP transceivers)                                        | Displays the voltage, in Volts.                                                                                                                                    |
| <b>Laser rx power</b><br>(Not available for SFP, SFP+, QSFP+, and CFP transceivers)                  | Displays the laser received optical power, in milliwatts (mW) and decibels referred to 1.0 mW (dBm).                                                               |
| <b>Receiver signal average optical power</b><br>(Not available for XFP, QSFP+, and CFP transceivers) | Displays the receiver signal average optical power, in milliwatts (mW) and decibels referred to 1.0 mW (dBm).                                                      |
| <b>Laser bias current high alarm</b>                                                                 | Displays whether the laser bias power setting high alarm is <b>On</b> or <b>Off</b> .                                                                              |
| <b>Laser bias current low alarm</b>                                                                  | Displays whether the laser bias power setting low alarm is <b>On</b> or <b>Off</b> .                                                                               |
| <b>Laser bias current high warning</b>                                                               | Displays whether the laser bias power setting high warning is <b>On</b> or <b>Off</b> .                                                                            |
| <b>Laser bias current low warning</b>                                                                | Displays whether the laser bias power setting low warning is <b>On</b> or <b>Off</b> .                                                                             |
| <b>Laser output power high alarm</b><br>(Not available for QSFP+ transceivers)                       | Displays whether the laser output power high alarm is <b>On</b> or <b>Off</b> .                                                                                    |
| <b>Laser output power low alarm</b><br>(Not available for QSFP+ transceivers)                        | Displays whether the laser output power low alarm is <b>On</b> or <b>Off</b> .                                                                                     |
| <b>Laser output power high warning</b><br>(Not available for QSFP+ transceivers)                     | Displays whether the laser output power high warning is <b>On</b> or <b>Off</b> .                                                                                  |

Table 22: show interfaces diagnostics optics Output Fields (*continued*)

| Field Name                                                                                          | Field Description                                                                 |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Laser output power low warning</b><br>(Not available for QSFP+ transceivers)                     | Displays whether the laser output power low warning is <b>On</b> or <b>Off</b> .  |
| <b>Laser temperature high alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)   | Displays whether the laser temperature high alarm is <b>On</b> or <b>Off</b> .    |
| <b>Laser temperature low alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)    | Displays whether the laser temperature low alarm is <b>On</b> or <b>Off</b> .     |
| <b>Laser temperature high warning</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers) | Displays whether the laser temperature high warning is <b>On</b> or <b>Off</b> .  |
| <b>Laser temperature low warning</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)  | Displays whether the laser temperature low warning is <b>On</b> or <b>Off</b> .   |
| <b>Module temperature high alarm</b><br>(Not available for QSFP+ transceivers)                      | Displays whether the module temperature high alarm is <b>On</b> or <b>Off</b> .   |
| <b>Module temperature low alarm</b><br>(Not available for QSFP+ transceivers)                       | Displays whether the module temperature low alarm is <b>On</b> or <b>Off</b> .    |
| <b>Module temperature high warning</b><br>(Not available for QSFP+ transceivers)                    | Displays whether the module temperature high warning is <b>On</b> or <b>Off</b> . |
| <b>Module temperature low warning</b><br>(Not available for QSFP+ transceivers)                     | Displays whether the module temperature low warning is <b>On</b> or <b>Off</b> .  |
| <b>Module voltage high alarm</b><br>(Not available for XFP and QSFP+ transceivers)                  | Displays whether the module voltage high alarm is <b>On</b> or <b>Off</b> .       |
| <b>Module voltage low alarm</b><br>(Not available for XFP and QSFP+ transceivers)                   | Displays whether the module voltage low alarm is <b>On</b> or <b>Off</b> .        |
| <b>Module voltage high warning</b><br>(Not available for XFP and QSFP+ transceivers)                | Displays whether the module voltage high warning is <b>On</b> or <b>Off</b> .     |
| <b>Module voltage low warning</b><br>(Not available for XFP and QSFP+ transceivers)                 | Displays whether the module voltage low warning is <b>On</b> or <b>Off</b> .      |

Table 22: show interfaces diagnostics optics Output Fields (*continued*)

| Field Name                                                                                                  | Field Description                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Laser rx power high alarm</b><br>(Not available for QSFP+ and CFP transceivers)                          | Displays whether the receive laser power high alarm is <b>On</b> or <b>Off</b> .                                                             |
| <b>Laser rx power low alarm</b><br>(Not available for QSFP+ and CFP transceivers)                           | Displays whether the receive laser power low alarm is <b>On</b> or <b>Off</b> .                                                              |
| <b>Laser rx power high warning</b><br>(Not available for QSFP+ and CFP transceivers)                        | Displays whether the receive laser power high warning is <b>On</b> or <b>Off</b> .                                                           |
| <b>Laser rx power low warning</b><br>(Not available for QSFP+ and CFP transceivers)                         | Displays whether the receive laser power low warning is <b>On</b> or <b>Off</b> .                                                            |
| <b>Laser bias current high alarm threshold</b><br>(Not available for QSFP+ transceivers)                    | Displays the vendor-specified threshold for the laser bias current high alarm.                                                               |
| <b>Module not ready alarm</b><br>(Not available for SFP, SFP+, and QSFP+ transceivers)                      | Displays whether the module not ready alarm is <b>On</b> or <b>Off</b> . When the output is <b>On</b> , the module has an operational fault. |
| <b>Module low power alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)                 | Displays whether the module low power alarm is <b>On</b> or <b>Off</b> .                                                                     |
| <b>Module initialization incomplete alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers) | Displays whether the module initialization incomplete alarm is <b>On</b> or <b>Off</b> .                                                     |
| <b>Module fault alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)                     | Displays whether the module fault alarm is <b>On</b> or <b>Off</b> .                                                                         |
| <b>PLD Flash initialization fault alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)   | Displays whether the PLD Flash initialization fault alarm is <b>On</b> or <b>Off</b> .                                                       |
| <b>Power supply fault alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)               | Displays whether the power supply fault alarm is <b>On</b> or <b>Off</b> .                                                                   |
| <b>Checksum fault alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)                   | Displays whether the checksum fault alarm is <b>On</b> or <b>Off</b> .                                                                       |
| <b>Tx laser disabled alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)                | Displays whether the Tx laser disabled alarm is <b>On</b> or <b>Off</b> .                                                                    |

Table 22: show interfaces diagnostics optics Output Fields (*continued*)

| Field Name                                                                                   | Field Description                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module power down alarm</b><br>(Not available for SFP, SFP+, QSFP+, and CFP transceivers) | Displays whether the module power down alarm is <b>On</b> or <b>Off</b> . When the output is <b>On</b> , module is in a limited power mode, low for normal operation.                            |
| <b>Tx data not ready alarm</b><br>(Not available for SFP, SFP+, QSFP+, and CFP transceivers) | Any condition leading to invalid data on the transmit path. Displays whether the Tx data not ready alarm is <b>On</b> or <b>Off</b> .                                                            |
| <b>Tx not ready alarm</b><br>(Not available for SFP, SFP+, QSFP+, and CFP transceivers)      | Any condition leading to invalid data on the transmit path. Displays whether the Tx not ready alarm is <b>On</b> or <b>Off</b> .                                                                 |
| <b>Tx laser fault alarm</b><br>(Not available for SFP, SFP+, QSFP+, and CFP transceivers)    | Laser fault condition. Displays whether the Tx laser fault alarm is <b>On</b> or <b>Off</b> .                                                                                                    |
| <b>Tx CDR loss of lock alarm</b><br>(Not available for SFP, SFP+, and QSFP+ transceivers)    | Transmit clock and data recovery (CDR) loss of lock. Loss of lock on the transmit side of the CDR. Displays whether the Tx CDR loss of lock alarm is <b>On</b> or <b>Off</b> .                   |
| <b>Rx not ready alarm</b><br>(Not available for SFP, SFP+, QSFP+, and CFP transceivers)      | Any condition leading to invalid data on the receive path. Displays whether the Rx not ready alarm is <b>On</b> or <b>Off</b> .                                                                  |
| <b>Rx loss of signal alarm</b><br>(Not available for SFP and SFP+ transceivers)              | Receive loss of signal alarm. When the output is <b>On</b> , indicates insufficient optical input power to the module. Displays whether the Rx loss of signal alarm is <b>On</b> or <b>Off</b> . |
| <b>Rx CDR loss of lock alarm</b><br>(Not available for SFP, SFP+, and QSFP+ transceivers)    | Receive CDR loss of lock. Loss of lock on the receive side of the CDR. Displays whether the Rx CDR loss of lock alarm is <b>On</b> or <b>Off</b> .                                               |
| <b>Laser bias current low alarm threshold</b><br>(Not available for QSFP+ transceivers)      | Displays the vendor-specified threshold for the laser bias current low alarm.                                                                                                                    |
| <b>Laser bias current high warning threshold</b><br>(Not available for QSFP+ transceivers)   | Displays the vendor-specified threshold for the laser bias current high warning.                                                                                                                 |
| <b>Laser bias current low warning threshold</b><br>(Not available for QSFP+ transceivers)    | Displays the vendor-specified threshold for the laser bias current low warning.                                                                                                                  |
| <b>Laser output power high alarm threshold</b><br>(Not available for QSFP+ transceivers)     | Displays the vendor-specified threshold for the laser output power high alarm.                                                                                                                   |
| <b>Laser output power low alarm threshold</b><br>(Not available for QSFP+ transceivers)      | Displays the vendor-specified threshold for the laser output power low alarm.                                                                                                                    |

Table 22: show interfaces diagnostics optics Output Fields (*continued*)

| Field Name                                                                                     | Field Description                                                                |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>Laser output power high warning threshold</b><br>(Not available for QSFP+ transceivers)     | Displays the vendor-specified threshold for the laser output power high warning. |
| <b>Laser output power low warning threshold</b><br>(Not available for QSFP+ transceivers)      | Displays the vendor-specified threshold for the laser output power low warning.  |
| <b>Module temperature high alarm threshold</b><br>(Not available for QSFP+ transceivers)       | Displays the vendor-specified threshold for the module temperature high alarm.   |
| <b>Module temperature low alarm threshold</b><br>(Not available for QSFP+ transceivers)        | Displays the vendor-specified threshold for the module temperature low alarm.    |
| <b>Module temperature high warning threshold</b><br>(Not available for QSFP+ transceivers)     | Displays the vendor-specified threshold for the module temperature high warning. |
| <b>Module temperature low warning threshold</b><br>(Not available for QSFP+ transceivers)      | Displays the vendor-specified threshold for the module temperature low warning.  |
| <b>Module voltage high alarm threshold</b><br>(Not available for XFP and QSFP+ transceivers)   | Displays the vendor-specified threshold for the module voltage high alarm.       |
| <b>Module voltage low alarm threshold</b><br>(Not available for XFP and QSFP+ transceivers)    | Displays the vendor-specified threshold for the module voltage low alarm.        |
| <b>Module voltage high warning threshold</b><br>(Not available for XFP and QSFP+ transceivers) | Displays the vendor-specified threshold for the module voltage high warning.     |
| <b>Module voltage low warning threshold</b><br>(Not available for XFP and QSFP+ transceivers)  | Displays the vendor-specified threshold for the module voltage low warning.      |
| <b>Laser rx power high alarm threshold</b><br>(Not available for QSFP+ transceivers)           | Displays the vendor-specified threshold for the laser rx power high alarm.       |
| <b>Laser rx power low alarm threshold</b><br>(Not available for QSFP+ transceivers)            | Displays the vendor-specified threshold for the laser rx power low alarm.        |
| <b>Laser rx power high warning threshold</b><br>(Not available for QSFP+ transceivers)         | Displays the vendor-specified threshold for the laser rx power high warning.     |



Table 22: show interfaces diagnostics optics Output Fields (*continued*)

| Field Name                                                                                                    | Field Description                                                                                          |
|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Laser rx power low warning threshold</b><br>(Not available for QSFP+ transceivers)                         | Displays the vendor-specified threshold for the laser rx power low warning.                                |
| <b>Laser temperature high alarm threshold</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)   | Displays the vendor-specified threshold for the laser temperature high alarm, in Celsius and Fahrenheit.   |
| <b>Laser temperature low alarm threshold</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)    | Displays the vendor-specified threshold for the laser temperature low alarm, in Celsius and Fahrenheit.    |
| <b>Laser temperature high warning threshold</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers) | Displays the vendor-specified threshold for the laser temperature high warning, in Celsius and Fahrenheit. |
| <b>Laser temperature low warning threshold</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)  | Displays the vendor-specified threshold for the laser temperature low warning, in Celsius and Fahrenheit.  |
| <b>SOA bias current high alarm threshold</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)    | Displays the vendor-specified threshold for SOA bias current high alarm.                                   |
| <b>SOA bias current low alarm threshold</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)     | Displays the vendor-specified threshold for SOA bias current low alarm.                                    |
| <b>SOA bias current high warning threshold</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)  | Displays the vendor-specified threshold for SOA bias current high warning.                                 |
| <b>SOA bias current low warning threshold</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)   | Displays the vendor-specified threshold for SOA bias current low warning.                                  |
| <b>Laser receiver power high alarm</b><br>(Not available for SFP, SFP+, and XFP transceivers)                 | Displays whether the laser receiver power high alarm is <b>On</b> or <b>Off</b> .                          |
| <b>Laser receiver power low alarm</b><br>(Not available for SFP, SFP+, and XFP transceivers)                  | Displays whether the laser receiver power low alarm is <b>On</b> or <b>Off</b> .                           |
| <b>Laser receiver power high warning</b><br>(Not available for SFP, SFP+, and XFP transceivers)               | Displays whether the laser receiver power high warning is <b>On</b> or <b>Off</b> .                        |
| <b>Laser receiver power low warning</b><br>(Not available for SFP, SFP+, and XFP transceivers)                | Displays whether the laser receiver power low warning is <b>On</b> or <b>Off</b> .                         |

Table 22: show interfaces diagnostics optics Output Fields (*continued*)

| Field Name                                                                                          | Field Description                                                                            |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Laser receiver power</b><br>(Not available for SFP, SFP+, and XFP transceivers)                  | Displays the laser receiver power, in milliwatts (mW) and decibels referred to 1.0 mW (dBm). |
| <b>Tx loss of signal functionality alarm</b><br>(Not available for SFP, SFP+, and XFP transceivers) | Displays whether the Tx loss of signal functionality alarm is <b>On</b> or <b>Off</b> .      |
| <b>APD supply fault alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)         | Displays whether the APD supply fault alarm is <b>On</b> or <b>Off</b> .                     |
| <b>TEC fault alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)                | Displays whether the TEC fault alarm is <b>On</b> or <b>Off</b> .                            |
| <b>Wavelength unlocked alarm</b><br>(Not available for SFP, SFP+, XFP, and QSFP+ transceivers)      | Displays whether the Wavelength unlocked alarm is <b>On</b> or <b>Off</b> .                  |

## Sample Output

### show interfaces diagnostics optics ge-0/1/0 (SFP Transceiver)

```

user@switch> show interfaces diagnostics optics ge-0/1/0
Physical interface: ge-0/1/0
 Laser bias current : 5.444 mA
 Laser output power : 0.3130 mW / -5.04 dBm
 Module temperature : 36 degrees C / 97 degrees F
 Module voltage : 3.2120 V
 Receiver signal average optical power : 0.3840 mW / -4.16 dBm
 Laser bias current high alarm : Off
 Laser bias current low alarm : Off
 Laser bias current high warning : Off
 Laser bias current low warning : Off
 Laser output power high alarm : Off
 Laser output power low alarm : Off
 Laser output power high warning : Off
 Laser output power low warning : Off
 Module temperature high alarm : Off
 Module temperature low alarm : Off
 Module temperature high warning : Off
 Module temperature low warning : Off
 Module voltage high alarm : Off
 Module voltage low alarm : Off
 Module voltage high warning : Off
 Module voltage low warning : Off
 Laser rx power high alarm : Off
 Laser rx power low alarm : Off
 Laser rx power high warning : Off
 Laser rx power low warning : Off
 Laser bias current high alarm threshold : 15.000 mA
 Laser bias current low alarm threshold : 1.000 mA
 Laser bias current high warning threshold : 12.000 mA

```

```

Laser bias current low warning threshold : 2.000 mA
Laser output power high alarm threshold : 0.6300 mW / -2.01 dBm
Laser output power low alarm threshold : 0.0660 mW / -11.80 dBm
Laser output power high warning threshold : 0.6300 mW / -2.01 dBm
Laser output power low warning threshold : 0.0780 mW / -11.08 dBm
Module temperature high alarm threshold : 109 degrees C / 228 degrees F
Module temperature low alarm threshold : -29 degrees C / -20 degrees F
Module temperature high warning threshold : 103 degrees C / 217 degrees F
Module temperature low warning threshold : -13 degrees C / 9 degrees F
Module voltage high alarm threshold : 3.900 V
Module voltage low alarm threshold : 2.700 V
Module voltage high warning threshold : 3.700 V
Module voltage low warning threshold : 2.900 V
Laser rx power high alarm threshold : 1.2589 mW / 1.00 dBm
Laser rx power low alarm threshold : 0.0100 mW / -20.00 dBm
Laser rx power high warning threshold : 0.7939 mW / -1.00 dBm
Laser rx power low warning threshold : 0.0157 mW / -18.04 dBm

```

## Sample Output

### show interfaces diagnostics optics xe-0/1/0 (SFP+ Transceiver)

```

user@switch> show interfaces diagnostics optics xe-0/1/0
Physical interface: xe-0/1/0
Laser bias current : 4.968 mA
Laser output power : 0.4940 mW / -3.06 dBm
Module temperature : 27 degrees C / 81 degrees F
Module voltage : 3.2310 V
Receiver signal average optical power : 0.0000
Laser bias current high alarm : Off
Laser bias current low alarm : Off
Laser bias current high warning : Off
Laser bias current low warning : Off
Laser output power high alarm : Off
Laser output power low alarm : Off
Laser output power high warning : Off
Laser output power low warning : Off
Module temperature high alarm : Off
Module temperature low alarm : Off
Module temperature high warning : Off
Module temperature low warning : Off
Module voltage high alarm : Off
Module voltage low alarm : Off
Module voltage high warning : Off
Module voltage low warning : Off
Laser rx power high alarm : Off
Laser rx power low alarm : On
Laser rx power high warning : Off
Laser rx power low warning : On
Laser bias current high alarm threshold : 10.500 mA
Laser bias current low alarm threshold : 2.000 mA
Laser bias current high warning threshold : 9.000 mA
Laser bias current low warning threshold : 2.500 mA
Laser output power high alarm threshold : 1.4120 mW / 1.50 dBm
Laser output power low alarm threshold : 0.0740 mW / -11.31 dBm
Laser output power high warning threshold : 0.7070 mW / -1.51 dBm
Laser output power low warning threshold : 0.1860 mW / -7.30 dBm
Module temperature high alarm threshold : 75 degrees C / 167 degrees F
Module temperature low alarm threshold : -5 degrees C / 23 degrees F
Module temperature high warning threshold : 70 degrees C / 158 degrees F
Module temperature low warning threshold : 0 degrees C / 32 degrees F

```

```

Module voltage high alarm threshold : 3.630 V
Module voltage low alarm threshold : 2.970 V
Module voltage high warning threshold : 3.465 V
Module voltage low warning threshold : 3.135 V
Laser rx power high alarm threshold : 1.5849 mW / 2.00 dBm
Laser rx power low alarm threshold : 0.0407 mW / -13.90 dBm
Laser rx power high warning threshold : 0.7943 mW / -1.00 dBm
Laser rx power low warning threshold : 0.1023 mW / -9.90 dBm

```

## Sample Output

### show interfaces diagnostics optics xe-0/1/0 (XFP Transceiver)

```

user@switch> show interfaces diagnostics optics xe-0/1/0
Physical interface: xe-0/1/0
Laser bias current : 8.029 mA
Laser output power : 0.6430 mW / -1.92 dBm
Module temperature : 4 degrees C / 39 degrees F
Laser rx power : 0.0012 mW / -29.21 dBm
Laser bias current high alarm : Off
Laser bias current low alarm : Off
Laser bias current high warning : Off
Laser bias current low warning : Off
Laser output power high alarm : Off
Laser output power low alarm : Off
Laser output power high warning : Off
Laser output power low warning : Off
Module temperature high alarm : Off
Module temperature low alarm : Off
Module temperature high warning : Off
Module temperature low warning : Off
Laser rx power high alarm : Off
Laser rx power low alarm : On
Laser rx power high warning : Off
Laser rx power low warning : On
Module not ready alarm : On
Module power down alarm : Off
Tx data not ready alarm : Off
Tx not ready alarm : Off
Tx laser fault alarm : Off
Tx CDR loss of lock alarm : Off
Rx not ready alarm : On
Rx loss of signal alarm : On
Rx CDR loss of lock alarm : On
Laser bias current high alarm threshold : 13.000 mA
Laser bias current low alarm threshold : 2.000 mA
Laser bias current high warning threshold : 12.000 mA
Laser bias current low warning threshold : 3.000 mA
Laser output power high alarm threshold : 0.8310 mW / -0.80 dBm
Laser output power low alarm threshold : 0.1650 mW / -7.83 dBm
Laser output power high warning threshold : 0.7410 mW / -1.30 dBm
Laser output power low warning threshold : 0.1860 mW / -7.30 dBm
Module temperature high alarm threshold : 90 degrees C / 194 degrees F
Module temperature low alarm threshold : 0 degrees C / 32 degrees F
Module temperature high warning threshold : 85 degrees C / 185 degrees F
Module temperature low warning threshold : 0 degrees C / 32 degrees F
Laser rx power high alarm threshold : 0.8912 mW / -0.50 dBm
Laser rx power low alarm threshold : 0.0912 mW / -10.40 dBm
Laser rx power high warning threshold : 0.7943 mW / -1.00 dBm
Laser rx power low warning threshold : 0.1023 mW / -9.90 dBm

```

## Sample Output

### show interfaces diagnostics optics et-3/0/0 (QSFP+ Transceiver)

```

user@switch> show interfaces diagnostics optics et-3/0/0
Physical interface: et-3/0/0
 Module temperature : 33 degrees C / 92 degrees F
 Module voltage : 3.3060 V
Lane 0
 Laser bias current : 7.182 mA
 Laser receiver power : 0.743 mW / -1.29 dBm
 Laser bias current high alarm : Off
 Laser bias current low alarm : Off
 Laser bias current high warning : Off
 Laser bias current low warning : Off
 Laser receiver power high alarm : Off
 Laser receiver power low alarm : Off
 Laser receiver power high warning : Off
 Laser receiver power low warning : Off
 Tx loss of signal functionality alarm : Off
 Rx loss of signal alarm : Off
Lane 1
 Laser bias current : 7.326 mA
 Laser receiver power : 0.752 mW / -1.24 dBm
 Laser bias current high alarm : Off
 Laser bias current low alarm : Off
 Laser bias current high warning : Off
 Laser bias current low warning : Off
 Laser receiver power high alarm : Off
 Laser receiver power low alarm : Off
 Laser receiver power high warning : Off
 Laser receiver power low warning : Off
 Tx loss of signal functionality alarm : Off
 Rx loss of signal alarm : Off
Lane 2
 Laser bias current : 7.447 mA
 Laser receiver power : 0.790 mW / -1.03 dBm
 Laser bias current high alarm : Off
 Laser bias current low alarm : Off
 Laser bias current high warning : Off
 Laser bias current low warning : Off
 Laser receiver power high alarm : Off
 Laser receiver power low alarm : Off
 Laser receiver power high warning : Off
 Laser receiver power low warning : Off
 Tx loss of signal functionality alarm : Off
 Rx loss of signal alarm : Off
Lane 3
 Laser bias current : 7.734 mA
 Laser receiver power : 0.768 mW / -1.15 dBm
 Laser bias current high alarm : Off
 Laser bias current low alarm : Off
 Laser bias current high warning : Off
 Laser bias current low warning : Off
 Laser receiver power high alarm : Off
 Laser receiver power low alarm : Off
 Laser receiver power high warning : Off
 Laser receiver power low warning : Off
 Tx loss of signal functionality alarm : Off
 Rx loss of signal alarm : Off

```

## Sample Output

### show interfaces diagnostics optics et-4/1/0 (CFP Transceiver)

```

user@switch> show interfaces diagnostics optics et-4/1/0
Physical interface: et-4/1/0
 Module temperature : 38 degrees C / 101 degrees F
 Module voltage : 3.2500 V
 Module temperature high alarm : Off
 Module temperature low alarm : Off
 Module temperature high warning : Off
 Module temperature low warning : Off
 Module voltage high alarm : Off
 Module voltage low alarm : Off
 Module voltage high warning : Off
 Module voltage low warning : Off
 Module not ready alarm : Off
 Module low power alarm : Off
 Module initialization incomplete alarm : Off
 Module fault alarm : Off
 PLD Flash initialization fault alarm : Off
 Power supply fault alarm : Off
 Checksum fault alarm : Off
 Tx laser disabled alarm : Off
 Tx loss of signal functionality alarm : Off
 Tx CDR loss of lock alarm : Off
 Rx loss of signal alarm : Off
 Rx CDR loss of lock alarm : Off
 Module temperature high alarm threshold : 75 degrees C / 167 degrees F
 Module temperature low alarm threshold : -5 degrees C / 23 degrees F
 Module temperature high warning threshold : 70 degrees C / 158 degrees F
 Module temperature low warning threshold : 0 degrees C / 32 degrees F
 Module voltage high alarm threshold : 3.5000 V
 Module voltage low alarm threshold : 3.0990 V
 Module voltage high warning threshold : 3.4000 V
 Module voltage low warning threshold : 3.2000 V
 Laser bias current high alarm threshold : 250.000 mA
 Laser bias current low alarm threshold : 37.500 mA
 Laser bias current high warning threshold : 225.000 mA
 Laser bias current low warning threshold : 50.000 mA
 Laser output power high alarm threshold : 3.9800 mW / 6.00 dBm
 Laser output power low alarm threshold : 0.4670 mW / -3.31 dBm
 Laser output power high warning threshold : 3.5480 mW / 5.50 dBm
 Laser output power low warning threshold : 0.5240 mW / -2.81 dBm
 Laser rx power high alarm threshold : 3.5481 mW / 5.50 dBm
 Laser rx power low alarm threshold : 0.0616 mW / -12.10 dBm
 Laser rx power high warning threshold : 3.1622 mW / 5.00 dBm
 Laser rx power low warning threshold : 0.0691 mW / -11.61 dBm
 Laser temperature high alarm threshold : 67 degrees C / 153 degrees F
 Laser temperature low alarm threshold : 35 degrees C / 95 degrees F
 Laser temperature high warning threshold : 62 degrees C / 144 degrees F
 Laser temperature low warning threshold : 40 degrees C / 104 degrees F
 SOA bias current high alarm threshold : 0.000 mA
 SOA bias current low alarm threshold : 0.000 mA
 SOA bias current high warning threshold : 0.000 mA
 SOA bias current low warning threshold : 0.000 mA
Lane 0
 Laser bias current : 131.684 mA
 Laser output power : 1.002 mW / 0.01 dBm
 Laser temperature : 54 degrees C / 128 degrees F
 Laser receiver power : 0.497 mW / -3.03 dBm

```

```

Laser bias current high alarm : Off
Laser bias current low alarm : Off
Laser bias current high warning : Off
Laser bias current low warning : Off
Laser output power high alarm : Off
Laser output power low alarm : Off
Laser output power high warning : Off
Laser output power low warning : Off
Laser temperature high alarm : Off
Laser temperature low alarm : Off
Laser temperature high warning : Off
Laser temperature low warning : Off
Laser receiver power high alarm : Off
Laser receiver power low alarm : Off
Laser receiver power high warning : Off
Laser receiver power low warning : Off
Tx loss of signal functionality alarm : Off
Rx CDR loss of lock alarm : Off
Rx loss of signal alarm : Off
Rx CDR loss of lock alarm : Off
APD supply fault alarm : Off
TEC fault alarm : Off
Wavelength unlocked alarm : Off

Lane 1
Laser bias current : 122.345 mA
Laser output power : 1.002 mW / 0.01 dBm
Laser temperature : 51 degrees C / 124 degrees F
Laser receiver power : 0.611 mW / -2.14 dBm
Laser bias current high alarm : Off
Laser bias current low alarm : Off
Laser bias current high warning : Off
Laser bias current low warning : Off
Laser output power high alarm : Off
Laser output power low alarm : Off
Laser output power high warning : Off
Laser output power low warning : Off
Laser temperature high alarm : Off
Laser temperature low alarm : Off
Laser temperature high warning : Off
Laser temperature low warning : Off
Laser receiver power high alarm : Off
Laser receiver power low alarm : Off
Laser receiver power high warning : Off
Laser receiver power low warning : Off
Tx loss of signal functionality alarm : Off
Tx CDR loss of lock alarm : Off
Rx loss of signal alarm : Off
Rx CDR loss of lock alarm : Off
APD supply fault alarm : Off
TEC fault alarm : Off
Wavelength unlocked alarm : Off

Lane 2
Laser bias current : 112.819 mA
Laser output power : 1.000 mW / 0.00 dBm
Laser temperature : 50 degrees C / 122 degrees F
Laser receiver power : 0.540 mW / -2.67 dBm
Laser bias current high alarm : Off
Laser bias current low alarm : Off
Laser bias current high warning : Off
Laser bias current low warning : Off
Laser output power high alarm : Off

```

```

Laser output power low alarm : Off
Laser output power high warning : Off
Laser output power low warning : Off
Laser temperature high alarm : Off
Laser temperature low alarm : Off
Laser temperature high warning : Off
Laser temperature low warning : Off
Laser receiver power high alarm : Off
Laser receiver power low alarm : Off
Laser receiver power high warning : Off
Laser receiver power low warning : Off
Tx loss of signal functionality alarm : Off
Tx CDR loss of lock alarm : Off
Rx loss of signal alarm : Off
Rx CDR loss of lock alarm : Off
APD supply fault alarm : Off
TEC fault alarm : Off
Wavelength unlocked alarm : Off

Lane 3
Laser bias current : 100.735 mA
Laser output power : 1.002 mW / 0.01 dBm
Laser temperature : 50 degrees C / 122 degrees F
Laser receiver power : 0.637 mW / -1.96 dBm
Laser bias current high alarm : Off
Laser bias current low alarm : Off
Laser bias current high warning : Off
Laser bias current low warning : Off
Laser output power high alarm : Off
Laser output power low alarm : Off
Laser output power high warning : Off
Laser output power low warning : Off
Laser temperature high alarm : Off
Laser temperature low alarm : Off
Laser temperature high warning : Off
Laser temperature low warning : Off
Laser receiver power high alarm : Off
Laser receiver power low alarm : Off
Laser receiver power high warning : Off
Laser receiver power low warning : Off
Tx loss of signal functionality alarm : Off
Tx CDR loss of lock alarm : Off
Rx loss of signal alarm : Off
Rx CDR loss of lock alarm : Off
APD supply fault alarm : Off
TEC fault alarm : Off
Wavelength unlocked alarm : Off

```



## show interfaces ge

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>show interfaces <i>device-name:type-fpc/pic/port</i> &lt;brief   detail   extensive   terse&gt; &lt;descriptions&gt; &lt;media&gt; &lt;routing-instance (all   <i>instance-name</i>)&gt; &lt;snmp-index <i>snmp-index</i>&gt; &lt;statistics&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b>      | <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | Display status information about the specified Gigabit Ethernet interface. This command does not display statistics for routed VLAN interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Options</b>                  | <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b><i>device-name:type-fpc/pic/port</i></b>—The device name is either the serial number or the alias of the QFabric system component, such as a Node device, Interconnect device, or QFabric infrastructure. The name can contain a maximum of 128 characters and cannot contain any colons.</p> <p><b>descriptions</b>—(Optional) Display interface description strings.</p> <p><b>media</b>—(Optional) Display media-specific information about network interfaces.</p> <p><b>routing instance (all   <i>instance-name</i>)</b>—(Optional) Display the name of an individual routing-instance or display all routing-instances.</p> <p><b>snmp-index <i>snmp-index</i></b>—(Optional) Display information for the specified SNMP index of the interface.</p> <p><b>statistics</b>—(Optional) Display static interface statistics.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Monitoring Interface Status and Traffic on page 60</a></li> <li>• <a href="#">Troubleshooting Network Interfaces on page 62</a></li> <li>• <a href="#">Troubleshooting an Aggregated Ethernet Interface on page 89</a></li> <li>• <a href="#">Junos OS Network Interfaces Library for Routing Devices</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>List of Sample Output</b>    | <p><a href="#">show interfaces on page 225</a></p> <p><a href="#">show interfaces brief on page 225</a></p> <p><a href="#">show interfaces detail (Symmetric Flow Control and Autonegotiation Enabled) on page 225</a></p> <p><a href="#">show interfaces detail (Asymmetric Flow Control and Autonegotiation Enabled) on page 226</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

[show interfaces extensive \(Symmetric Flow Control and Autonegotiation Enabled\) on page 227](#)

[show interfaces extensive \(Asymmetric Flow Control and Autonegotiation Enabled\) on page 229](#)

[show interfaces terse on page 231](#)

[show interfaces terse \(QFabric Systems\) on page 231](#)

**Output Fields** Table 23 on page 218 lists the output fields for the **show interfaces ge** command. Output fields are listed in the approximate order in which they appear.

**Table 23: show interfaces ge Output Fields**

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Level of Output               |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>Physical Interface</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               |
| <b>Physical interface</b>      | Name of the physical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | All levels                    |
| <b>Enabled</b>                 | State of the interface: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | All levels                    |
| <b>Interface index</b>         | Index number of the physical interface, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>detail extensive none</b>  |
| <b>SNMP ifIndex</b>            | SNMP index number for the physical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>detail extensive none</b>  |
| <b>Generation</b>              | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive</b>       |
| <b>Description</b>             | Optional user-specified description.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>brief detail extensive</b> |
| <b>Link-level type</b>         | Encapsulation being used on the physical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All levels                    |
| <b>MTU</b>                     | Maximum transmission unit size on the physical interface. The default is 1514.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | All levels                    |
| <b>Speed</b>                   | Speed at which the interface is running.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | All levels                    |
| <b>Loopback</b>                | Loopback status: <b>Enabled</b> or <b>Disabled</b> . If loopback is enabled, type of loopback: <b>Local</b> or <b>Remote</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | All levels                    |
| <b>Source filtering</b>        | Source filtering status: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | All levels                    |
| <b>Flow control</b>            | Flow control status: <b>Enabled</b> or <b>Disabled</b> .<br><br><b>NOTE:</b> This field is only displayed if asymmetric flow control is not configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>detail extensive</b>       |
| <b>Configured-flow-control</b> | Configured flow control for the interface transmit buffers ( <b>tx-buffers</b> ) and receive buffers ( <b>rx-buffers</b> ):<br><br><ul style="list-style-type: none"> <li><b>tx-buffers</b>—<b>On</b> if the interface is configured to respond to Ethernet PAUSE messages received from the connected peer.<br/><b>Off</b> if the interface is not configured to respond to received PAUSE messages.</li> <li><b>rx-buffers</b>—<b>On</b> if the interface is configured to generate and send Ethernet PAUSE messages to the connected peer.<br/><b>Off</b> if the interface is not configured to generate and send PAUSE messages.</li> </ul> <b>NOTE:</b> This field is only displayed if asymmetric flow control is configured. | <b>detail extensive</b>       |

Table 23: show interfaces ge Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Level of Output              |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Auto-negotiation</b>        | Autonegotiation status: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | All levels                   |
| <b>Remote-fault</b>            | Remote fault status: <ul style="list-style-type: none"> <li>• <b>Online</b>—Autonegotiation is manually configured as online.</li> <li>• <b>Offline</b>—Autonegotiation is manually configured as offline.</li> </ul>                                                                                                                                                                                                                                                                                                            | All levels                   |
| <b>Device flags</b>            | Information about the physical device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | All levels                   |
| <b>Interface flags</b>         | Information about the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All levels                   |
| <b>Link flags</b>              | Information about the link.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | All levels                   |
| <b>CoS queues</b>              | Number of CoS queues configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>detail extensive none</b> |
| <b>Hold-times</b>              | Current interface hold-time up and hold-time down, in milliseconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive</b>      |
| <b>Current address</b>         | Configured MAC address.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>detail extensive none</b> |
| <b>Hardware address</b>        | MAC address of the hardware.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive none</b> |
| <b>Last flapped</b>            | Date, time, and how long ago the interface went from down to up. The format is <b>Last flapped: year-month-day hour:minute:second timezone (hour:minute:second ago)</b> . For example, <b>Last flapped: 2008-01-16 10:52:40 UTC (3d 22:58 ago)</b> .                                                                                                                                                                                                                                                                             | <b>detail extensive none</b> |
| <b>Statistics last cleared</b> | Time when the statistics for the interface were last set to zero.                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive</b>      |
| <b>Traffic statistics</b>      | Number and rate of bytes and packets received and transmitted on the physical interface. <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled on the switch.</p> | <b>detail extensive</b>      |

Table 23: show interfaces ge Output Fields (*continued*)

| Field Name          | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Level of Output  |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Input errors</b> | <p>Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• <b>Errors</b>—Sum of the incoming frame aborts and FCS errors.</li> <li>• <b>Drops</b>—Number of packets dropped by the input queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• <b>Framing errors</b>—Number of packets received with an invalid frame checksum (FCS).</li> <li>• <b>Runts</b>—Number of frames received that are smaller than the runt threshold.</li> <li>• <b>Policed discards</b>—Number of frames that the incoming packet match code discarded because they were not recognized or not of interest. Usually, this field reports protocols that Junos OS does not handle.</li> <li>• <b>L3 incompletes</b>—Number of incoming packets discarded because they failed Layer 3 sanity checks of the headers. For example, a frame with less than 20 bytes of available IP header is discarded.</li> <li>• <b>L2 channel errors</b>—Number of times the software did not find a valid logical interface for an incoming frame.</li> <li>• <b>L2 mismatch timeouts</b>—Number of malformed or short packets that caused the incoming packet handler to discard the frame as unreadable.</li> <li>• <b>FIFO errors</b>—Number of FIFO errors in the receive direction that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>Resource errors</b>—Sum of transmit drops.</li> </ul> | <b>extensive</b> |

Table 23: show interfaces ge Output Fields (*continued*)

| Field Name                              | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Level of Output              |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Output errors</b>                    | <p>Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• <b>Carrier transitions</b>—Number of times the interface has gone from <b>down</b> to <b>up</b>. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the PIC or PIM is malfunctioning.</li> <li>• <b>Errors</b>—Sum of the outgoing frame aborts and FCS errors.</li> <li>• <b>Drops</b>—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• <b>Collisions</b>—Number of Ethernet collisions. The Gigabit Ethernet PIC supports only full-duplex operation, so for Gigabit Ethernet PICs, this number should always remain 0. If it is nonzero, there is a software bug.</li> <li>• <b>Aged packets</b>—Number of packets that remained in shared packet SDRAM so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly malfunctioning hardware.</li> <li>• <b>FIFO errors</b>—Number of FIFO errors in the send direction as reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>HS link CRC errors</b>—Number of errors on the high-speed links between the ASICs responsible for handling the switch interfaces.</li> <li>• <b>MTU errors</b>—Number of packets whose size exceeded the MTU of the interface.</li> <li>• <b>Resource errors</b>—Sum of transmit drops.</li> </ul> | <b>extensive</b>             |
| <b>Egress queues</b>                    | Total number of egress queues supported on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail extensive</b>      |
| <b>Queue counters (Egress )</b>         | <p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> <li>• <b>Queued packets</b>—Number of queued packets.</li> <li>• <b>Transmitted packets</b>—Number of transmitted packets.</li> <li>• <b>Dropped packets</b>—Number of packets dropped by the ASIC's RED mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail extensive</b>      |
| <b>Queue Number</b>                     | The CoS queue number and the forwarding classes mapped to the queue number. The <b>Mapped forwarding class</b> column lists the forwarding classes mapped to each CoS queue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive</b>      |
| <b>Active alarms and Active defects</b> | <p>Ethernet-specific defects that can prevent the interface from passing packets. When a defect persists for a certain amount of time, it is promoted to an alarm. Based on the switch configuration, an alarm can ring the red or yellow alarm bell on the switch or turn on the red or yellow alarm LED on the front of the switch. These fields can contain the value <b>None</b> or <b>Link</b>.</p> <ul style="list-style-type: none"> <li>• <b>None</b>—There are no active defects or alarms.</li> <li>• <b>Link</b>—Interface has lost its link state, which usually means that the cable is unplugged, the far-end system has been turned off, or the PIC is malfunctioning.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive none</b> |

Table 23: show interfaces ge Output Fields (*continued*)

| Field Name               | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Level of Output  |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>MAC statistics</b>    | <p>Receive and Transmit statistics reported by the PIC's MAC subsystem.</p> <ul style="list-style-type: none"> <li>• <b>Total octets</b> and <b>total packets</b>—Total number of octets and packets. For Gigabit Ethernet IQ PICs, the received octets count varies by interface type.</li> <li>• <b>Unicast packets, Broadcast packets, and Multicast packets</b>—Number of unicast, broadcast, and multicast packets.</li> <li>• <b>CRC/Align errors</b>—Total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, and had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error).</li> <li>• <b>FIFO error</b>—Number of FIFO errors that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>MAC control frames</b>—Number of MAC control frames.</li> <li>• <b>MAC pause frames</b>—Number of MAC control frames with <b>pause</b> operational code.</li> <li>• <b>Oversized frames</b>—Number of packets that exceeds the configured MTU.</li> <li>• <b>Jabber frames</b>—Number of frames that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. This definition of jabber is different from the definition in IEEE-802.3 section 8.2.1.5 (10BASE5) and section 10.3.1.4 (10BASE2). These documents define jabber as the condition in which any packet exceeds 20 ms. The allowed range to detect jabber is from 20 ms to 150 ms.</li> <li>• <b>Fragment frames</b>—Total number of packets that were less than 64 octets in length (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. Fragment frames normally increment because both runts (which are normal occurrences caused by collisions) and noise hits are counted.</li> <li>• <b>VLAN tagged frames</b>—Number of frames that are VLAN tagged. The system uses the TPID of 0x8100 in the frame to determine whether a frame is tagged or not. This counter is not supported on EX Series switches and is always displayed as 0.</li> <li>• <b>Code violations</b>—Number of times an event caused the PHY to indicate "Data reception error" or "invalid data symbol error."</li> </ul> | <b>extensive</b> |
| <b>Filter Statistics</b> | Receive and Transmit statistics reported by the PIC's MAC address filter subsystem.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>extensive</b> |

Table 23: show interfaces ge Output Fields (*continued*)

| Field Name                             | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Level of Output       |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Autonegotiation information            | <p>Information about link autonegotiation:</p> <ul style="list-style-type: none"> <li>• <b>Negotiation status:</b> <ul style="list-style-type: none"> <li>• <b>Incomplete</b>—Ethernet interface has the speed or link mode configured.</li> <li>• <b>No autonegotiation</b>—Remote Ethernet interface has the speed or link mode configured or does not perform autonegotiation.</li> <li>• <b>Complete</b>—Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful.</li> </ul> </li> <li>• <b>Link partner status</b>—OK when the Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful.</li> <li>• <b>Link partner:</b> <ul style="list-style-type: none"> <li>• <b>Link mode</b>—Depending on the capability of the attached Ethernet device, either <b>Full-duplex</b> or <b>Half-duplex</b>.</li> <li>• <b>Flow control</b>—Types of flow control supported by the remote Ethernet device. For Gigabit Ethernet interfaces, types are <b>Symmetric</b> (link partner supports PAUSE on receive and transmit), <b>Asymmetric</b> (link partner supports PAUSE on transmit), and <b>Symmetric/Asymmetric</b> (link partner supports PAUSE on both receive and transmit or PAUSE only on receive).</li> <li>• <b>Remote fault</b>—Remote fault information from the link partner—<b>Failure</b> indicates a receive link error. <b>OK</b> indicates that the link partner is receiving. <b>Negotiation error</b> indicates a negotiation error. <b>Offline</b> indicates that the link partner is going offline.</li> <li>• <b>Link partner speed</b>—Speed of the link partner.</li> </ul> </li> <li>• <b>Local resolution:</b> <ul style="list-style-type: none"> <li>• <b>Flow control</b>—Types of flow control supported by the remote Ethernet device. For Gigabit Ethernet interfaces, types are <b>Symmetric</b> (link partner supports PAUSE on receive and transmit), <b>Asymmetric</b> (link partner supports PAUSE on transmit), and <b>Symmetric/Asymmetric</b> (link partner supports PAUSE on both receive and transmit or PAUSE only on receive). For asymmetric PAUSE, shows if the PAUSE transmit and PAUSE receive states on the interface are <b>enable</b> or <b>disable</b>.</li> <li>• <b>Remote fault</b>—Remote fault information. <b>Link OK</b> (no error detected on receive), <b>Offline</b> (local interface is offline), and <b>Link Failure</b> (link error detected on receive).</li> </ul> </li> </ul> | extensive             |
| Packet Forwarding Engine configuration | <p>Information about the configuration of the Packet Forwarding Engine:</p> <ul style="list-style-type: none"> <li>• <b>Destination slot</b>—FPC slot number.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | extensive             |
| Logical Interface                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                       |
| Logical interface                      | Name of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | All levels            |
| Index                                  | Index number of the logical interface, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | detail extensive none |
| SNMP ifIndex                           | SNMP interface index number for the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | detail extensive none |
| Generation                             | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | detail extensive      |
| Flags                                  | Information about the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | All levels            |

Table 23: show interfaces ge Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                     | Level of Output              |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Encapsulation</b>           | Encapsulation on the logical interface.                                                                                                                                                                                                                                                                                                                                                                               | All levels                   |
| <b>Protocol</b>                | Protocol family.                                                                                                                                                                                                                                                                                                                                                                                                      | <b>detail extensive none</b> |
| <b>Traffic statistics</b>      | Number and rate of bytes and packets received (input) and transmitted (output) on the specified interface.                                                                                                                                                                                                                                                                                                            | <b>detail extensive</b>      |
| <b>IPv6 transit statistics</b> | If IPv6 statistics tracking is enabled, number of IPv6 bytes and packets received and transmitted on the logical interface.                                                                                                                                                                                                                                                                                           | <b>extensive</b>             |
| <b>Local statistics</b>        | Number and rate of bytes and packets destined to and from the switch.                                                                                                                                                                                                                                                                                                                                                 | <b>extensive</b>             |
| <b>Transit statistics</b>      | Number and rate of bytes and packets transiting the switch.                                                                                                                                                                                                                                                                                                                                                           | <b>extensive</b>             |
| <b>Generation</b>              | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive</b>      |
| <b>Route Table</b>             | Route table in which the logical interface address is located. For example, 0 refers to the routing table <b>inet.0</b> .                                                                                                                                                                                                                                                                                             | <b>detail extensive none</b> |
| <b>Input Filters</b>           | Names of any input filters applied to this interface.                                                                                                                                                                                                                                                                                                                                                                 | <b>detail extensive</b>      |
| <b>Output Filters</b>          | Names of any output filters applied to this interface.                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive</b>      |
| <b>Flags</b>                   | Information about protocol family flags.<br><br>If unicast reverse-path forwarding (RPF) is explicitly configured on the specified interface, the uRPF flag is displayed. If unicast RPF was configured on a different interface (and therefore is enabled on all switch interfaces) but was not explicitly configured on the specified interface, the uRPF flag is not displayed even though unicast RPF is enabled. | <b>detail extensive</b>      |
| <b><i>protocol-family</i></b>  | Protocol family configured on the logical interface. If the protocol is <b>inet</b> , the IP address of the interface is also displayed.                                                                                                                                                                                                                                                                              | <b>brief</b>                 |
| <b>Flags</b>                   | Information about the address flags.                                                                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive none</b> |
| <b>Destination</b>             | IP address of the remote side of the connection.                                                                                                                                                                                                                                                                                                                                                                      | <b>detail extensive none</b> |
| <b>Local</b>                   | IP address of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive none</b> |
| <b>Broadcast</b>               | Broadcast address of the logical interlace.                                                                                                                                                                                                                                                                                                                                                                           | <b>detail extensive none</b> |
| <b>Generation</b>              | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive</b>      |



## Sample Output

### show interfaces

```

user@switch> show interfaces ge-0/0/9
Physical interface: ge-0/0/9, Enabled, Physical link is Down
 Interface index: 129, SNMP ifIndex: 21
 Link-level type: Ethernet, MTU: 1514, Speed: Unspecified, Loopback: Disabled,
 Source filtering: Disabled, Flow control: Enabled, Auto-negotiation: Enabled
 Remote fault: Online
 Device flags : Present Running Down
 Interface flags: Hardware-Down SNMP-Traps Internal: 0x0
 CoS queues : 8 supported, 8 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 00:19:e2:50:3f:41, Hardware address: 00:19:e2:50:3f:41
 Last flapped : 2008-01-16 11:40:53 UTC (4d 02:30 ago)
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)
 Ingress rate at Packet Forwarding Engine : 0 bps (0 pps)
 Ingress drop rate at Packet Forwarding Engine : 0 bps (0 pps)
 Active alarms : None
 Active defects : None

Logical interface ge-0/0/9.0 (Index 65) (SNMP ifIndex 22)
 Flags: SNMP-Traps
 Encapsulation: ENET2
 Input packets : 0
 Output packets: 0
 Protocol eth-switch
 Flags: None

```

### show interfaces brief

```

user@switch> show interfaces ge-0/0/9 brief
Physical interface: ge-0/0/9, Enabled, Physical link is Down
 Description: voice priority and tcp and icmp traffic rate-limiting filter at i
 ngress port
 Link-level type: Ethernet, MTU: 1514, Speed: Unspecified, Loopback: Disabled,
 Source filtering: Disabled, Flow control: Enabled, Auto-negotiation: Enabled,
 Remote fault: Online
 Device flags : Present Running Down
 Interface flags: Hardware-Down SNMP-Traps Internal: 0x0
 Link flags : None

Logical interface ge-0/0/9.0
 Flags: Device-Down SNMP-Traps Encapsulation: ENET2
 eth-switch

```

### show interfaces detail (Symmetric Flow Control and Autonegotiation Enabled)

```

user@switch> show interfaces ge-0/0/9 detail
Physical interface: ge-0/0/9, Enabled, Physical link is Up
 Interface index: 193, SNMP ifIndex: 206, Generation: 196
 Link-level type: Ethernet, MTU: 1514, Speed: Auto, Duplex: Auto,
 BPDU Error: None, MAC-REWRITE Error: None, Loopback: Disabled,
 Source filtering: Disabled, Flow control: Enabled, Auto-negotiation: Enabled,
 Remote fault: Online
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 8 supported, 8 maximum usable queues

```

```

Hold-times : Up 0 ms, Down 0 ms
Current address: 00:1f:12:30:ff:40, Hardware address: 00:1f:12:30:ff:40
Last flapped : 2009-05-05 06:03:05 UTC (00:22:13 ago)
Statistics last cleared: Never
Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Egress queues: 8 supported, 4 in use
Queue counters: Queued packets Transmitted packets Dropped packets

 0 best-effort 0 0 0
 1 assured-forw 0 0 0
 5 expedited-fo 0 0 0
 7 network-cont 0 0 0

Active alarms : None
Active defects : None

Logical interface ge-0/0/9.0 (Index 65) (SNMP ifIndex 235) (Generation 130)
Flags: SNMP-Traps Encapsulation: ENET2
Bandwidth: 0
Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Local statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
Protocol eth-switch, Generation: 146, Route table: 0
Flags: Is-Primary
Input Filters: f1,
Output Filters: f2,,,

```

#### show interfaces detail (Asymmetric Flow Control and Autonegotiation Enabled)

```

user@switch> show interfaces ge-0/0/9 detail
Physical interface: ge-0/0/9, Enabled, Physical link is Up
Interface index: 193, SNMP ifIndex: 206, Generation: 196
Link-level type: Ethernet, MTU: 1514, Speed: Auto, Duplex: Auto,
BPDU Error: None, MAC-REWRITE Error: None, Loopback: Disabled,
Source filtering: Disabled, Configured-flow-control tx-buffers: off
rx-buffers: on ,
Auto-negotiation: Enabled,

```

```

Remote fault: Online
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x0
Link flags : None
CoS queues : 8 supported, 8 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:1f:12:30:ff:40, Hardware address: 00:1f:12:30:ff:40
Last flapped : 2009-05-05 06:03:05 UTC (00:22:13 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets : 0 0 pps
Output packets: 0 0 pps
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets : 0
Output packets: 0
Egress queues: 8 supported, 4 in use
Queue counters:

```

|                | Queued packets | Transmitted packets | Dropped packets |
|----------------|----------------|---------------------|-----------------|
| 0 best-effort  | 0              | 0                   | 0               |
| 1 assured-forw | 0              | 0                   | 0               |
| 5 expedited-fo | 0              | 0                   | 0               |
| 7 network-cont | 0              | 0                   | 0               |

```

Active alarms : None
Active defects : None

Logical interface ge-0/0/9.0 (Index 65) (SNMP ifIndex 235) (Generation 130)
Flags: SNMP-Traps Encapsulation: ENET2
Bandwidth: 0
Traffic statistics:
Input bytes : 0
Output bytes : 0
Input packets : 0
Output packets: 0
Local statistics:
Input bytes : 0
Output bytes : 0
Input packets : 0
Output packets: 0
Transit statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets : 0 0 pps
Output packets: 0 0 pps
Protocol eth-switch, Generation: 146, Route table: 0
Flags: Is-Primary
Input Filters: f1,
Output Filters: f2,,,,

```

#### show interfaces extensive (Symmetric Flow Control and Autonegotiation Enabled)

```

user@switch> show interfaces ge-0/0/12 extensive
interface: ge-0/0/12, Enabled, Physical link is Down
Interface index: 49164, SNMP ifIndex: 574, Generation: 142

```

```

Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps, Duplex: Full-Duplex,
BPDU Error: None, MAC-REWRITE Error: None, Loopback: Disabled,
Source filtering: Disabled, Flow control: Enabled, Auto-negotiation: Enabled,
Remote fault: Online
Device flags : Present Running Down
Interface flags: Hardware-Down SNMP-Traps Internal: 0x0
Link flags : None
CoS queues : 8 supported, 8 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:22:83:2a:d8:dc, Hardware address: 00:22:83:2a:d8:dc
Last flapped : 2011-02-25 00:45:03 UTC (22:42:48 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets : 0 0 pps
Output packets: 0 0 pps
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets : 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0,
L3 incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0,
FIFO errors: 0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,

FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 8 in use
Queue counters:

```

|                | Queued packets | Transmitted packets | Dropped packets |
|----------------|----------------|---------------------|-----------------|
| 0 best-effort  | 0              | 0                   | 0               |
| 2 no-loss      | 0              | 0                   | 0               |
| 3 fcoe         | 0              | 0                   | 0               |
| 7 network-cont | 0              | 0                   | 0               |

```

Queue number: Mapped forwarding classes
0 best-effort
2 no-loss
3 fcoe
7 network-control
Active alarms : LINK
Active defects : LINK
MAC statistics:

```

|                    | Receive | Transmit |
|--------------------|---------|----------|
| Total octets       | 0       | 0        |
| Total packets      | 0       | 0        |
| Unicast packets    | 0       | 0        |
| Broadcast packets  | 0       | 0        |
| Multicast packets  | 0       | 0        |
| CRC/Align errors   | 0       | 0        |
| FIFO errors        | 0       | 0        |
| MAC control frames | 0       | 0        |
| MAC pause frames   | 0       | 0        |
| Oversized frames   | 0       |          |
| Jabber frames      | 0       |          |
| Fragment frames    | 0       |          |

```

VLAN tagged frames 0
Code violations 0
MAC Priority Flow Control Statistics:
 Priority : 0 0 0
 Priority : 1 0 0
 Priority : 2 0 0
 Priority : 3 0 0
 Priority : 4 0 0
 Priority : 5 0 0
 Priority : 6 0 0
 Priority : 7 0 0
Filter statistics:
 Input packet count 0
 Input packet rejects 0
 Input DA rejects 0
 Input SA rejects 0
 Output packet count 0
 Output packet pad count 0
 Output packet error count 0
CAM destination filters: 1, CAM source filters: 0
Autonegotiation information:
 Negotiation status: Incomplete
Packet Forwarding Engine configuration:
 Destination slot: 0
CoS information:
 Direction : Output
CoS transmit queue Bandwidth Buffer Priority
Limit
 0 best-effort 75 750000000 75 0 low
none
 7 network-control 5 500000000 5 0 low
none
 8 mcast-be 15 1500000000 15 0 low
none
 11 mcast-nc 5 500000000 5 0 low
none

```

#### show interfaces extensive (Asymmetric Flow Control and Autonegotiation Enabled)

```

user@switch> show interfaces ge-0/0/12 extensive
interface: ge-0/0/12, Enabled, Physical link is Down
 Interface index: 49164, SNMP ifIndex: 574, Generation: 142
 Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps, Duplex: Full-Duplex,
 BPDU Error: None, MAC-REWRITE Error: None, Loopback: Disabled,
 Source filtering: Disabled, Configured-flow-control tx-buffers: off
rx-buffers: on
 Auto-negotiation: Enabled,
 Remote fault: Online
 Device flags : Present Running Down
 Interface flags: Hardware-Down SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 8 supported, 8 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 00:22:83:2a:d8:dc, Hardware address: 00:22:83:2a:d8:dc
 Last flapped : 2011-02-25 00:45:03 UTC (22:42:48 ago)
 Statistics last cleared: Never
Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes: 0 0 bps
 Input packets: 0 0 pps

```

```

Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Input errors:
 Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0,
 L3 incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0,
 FIFO errors: 0, Resource errors: 0
Output errors:
 Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,

 FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 8 in use
Queue counters: Queued packets Transmitted packets Dropped packets

 0 best-effort 0 0 0
 2 no-loss 0 0 0
 3 fcoe 0 0 0
 7 network-cont 0 0 0

Queue number: Mapped forwarding classes
 0 best-effort
 2 no-loss
 3 fcoe
 7 network-control
Active alarms : LINK
Active defects : LINK
MAC statistics:
 Total octets Receive Transmit
 Total packets 0 0
 Unicast packets 0 0
 Broadcast packets 0 0
 Multicast packets 0 0
 CRC/Align errors 0 0
 FIFO errors 0 0
 MAC control frames 0 0
 MAC pause frames 0 0
 Oversized frames 0
 Jabber frames 0
 Fragment frames 0
 VLAN tagged frames 0
 Code violations 0
MAC Priority Flow Control Statistics:
 Priority : 0 0 0
 Priority : 1 0 0
 Priority : 2 0 0
 Priority : 3 0 0
 Priority : 4 0 0
 Priority : 5 0 0
 Priority : 6 0 0
 Priority : 7 0 0
Filter statistics:
 Input packet count 0
 Input packet rejects 0
 Input DA rejects 0
 Input SA rejects 0

```

```

Output packet count 0
Output packet pad count 0
Output packet error count 0
CAM destination filters: 1, CAM source filters: 0
Autonegotiation information:
Negotiation status: Complete
Link Partner:
Link mode: Full-duplex, Flow control: None, Remote fault: OK,
Link partner Speed: 1000 Mbps
Local resolution:
Flow control: enable PAUSE transmit and Disable PAUSE receive, Remote
fault: Link OK
Packet Forwarding Engine configuration:
Destination slot: 0
CoS information:
Direction : Output
CoS transmit queue Bandwidth Buffer Priority
Limit
 % bps % usec
0 best-effort 75 750000000 75 0 low
none
7 network-control 5 50000000 5 0 low
none
8 mcast-be 15 150000000 15 0 low
none
11 mcast-nc 5 50000000 5 0 low
none

```

#### show interfaces terse

```

user@switch> show interfaces ge-0/0/12 terse
Interface Admin Link Proto Local Remote
ge-0/0/12 up up

```

#### show interfaces terse (QFabric Systems)

```

user@switch> show interfaces node1:ge-0/0/0 terse
Physical interface: node1:ge-0/0/0, Enabled, Physical link is Down
Interface index: 129, SNMP ifIndex: 2884086
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
Error: None, MAC-REWRITE Error: None,
Loopback: Disabled, Source filtering: Disabled, Flow control: Enabled
Interface flags: Internal: 0x4000
CoS queues : 8 supported, 8 maximum usable queues
Current address: 02:00:09:03:00:00, Hardware address: 02:00:09:03:00:00
Last flapped : Never
Input rate : 0 bps (0 pps)
Output rate : 0 bps (0 pps)

```

## show interfaces (GRE)


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>show interfaces <i>interface-type</i> &lt;brief   detail   extensive   terse&gt; &lt;descriptions&gt; &lt;media&gt; &lt;snmp-index <i>snmp-index</i>&gt; &lt;statistics&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Release Information</b>      | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 12.1 for EX Series switches.</p> <p>Command introduced in Junos OS Release 13.2 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>              | Display status information about the specified generic routing encapsulation (GRE) interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Options</b>                  | <p><b><i>interface-type</i></b>—On M Series and T Series routers and EX Series switches, the interface type is <b><i>gr-fpc/pic/port</i></b>.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified output level of interface information.</p> <p><b>descriptions</b>—(Optional) Display interface description strings.</p> <p><b>media</b>—(Optional) Display media-specific information about network interfaces.</p> <p><b>snmp-index <i>snmp-index</i></b>—(Optional) Display information for the specified SNMP index of the interface.</p> <p><b>statistics</b>—(Optional) Display static interface statistics.</p> |
|                                 | <p> <b>NOTE:</b> You can configure generic routing encapsulation (GRE) interfaces (gre-x/y/z) only for GMPLS control channels. GRE interfaces are not supported or configurable for other applications. For more information about GMPLS, see the <i>Junos OS MPLS Applications Library for Routing Devices</i> and the <i>Junos OS, Release 14.1</i>.</p>                                                                                                                                                                                                         |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>List of Sample Output</b>    | <p><a href="#">show interfaces (GRE) on page 236</a></p> <p><a href="#">show interfaces brief (GRE) on page 236</a></p> <p><a href="#">show interfaces detail (GRE) on page 236</a></p> <p><a href="#">show interfaces detail (GRE) on an EX4200 Virtual Chassis Member Switch on page 237</a></p> <p><a href="#">show interfaces extensive (GRE) on page 238</a></p>                                                                                                                                                                                                                                                                                 |
| <b>Output Fields</b>            | <p>Table 24 on page 233 lists the output fields for the <b>show interfaces (GRE)</b> command. Output fields are listed in the approximate order in which they appear.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



Table 24: GRE show interfaces Output Fields

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Level of Output              |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Physical Interface</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |
| <b>Physical interface</b>      | Name of the physical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | All levels                   |
| <b>Enabled</b>                 | State of the interface. Possible values are described in the “Enabled Field” section under <i>Common Output Fields Description</i> .                                                                                                                                                                                                                                                                                                                                                               | All levels                   |
| <b>Interface index</b>         | Physical interface's index number, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive none</b> |
| <b>SNMP ifIndex</b>            | SNMP index number for the physical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>detail extensive none</b> |
| <b>Generation</b>              | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive</b>      |
| <b>Type</b>                    | Type of interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All levels                   |
| <b>Link-level type</b>         | Encapsulation used on the physical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                      | All levels                   |
| <b>MTU</b>                     | MTU size on the physical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                | All levels                   |
| <b>Speed</b>                   | Speed at which the interface is running.                                                                                                                                                                                                                                                                                                                                                                                                                                                           | All levels                   |
| <b>Hold-times</b>              | Current interface hold-time up and hold-time down, in milliseconds.                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive</b>      |
| <b>Device Flags</b>            | Information about the physical device. Possible values are described in the “Device Flags” section under <i>Common Output Fields Description</i> .                                                                                                                                                                                                                                                                                                                                                 | All levels                   |
| <b>Interface Flags</b>         | Information about the interface. Possible values are described in the “Interface Flags” section under <i>Common Output Fields Description</i> .                                                                                                                                                                                                                                                                                                                                                    | All levels                   |
| <b>Input rate</b>              | Input rate in bits per second (bps) and packets per second (pps).                                                                                                                                                                                                                                                                                                                                                                                                                                  | None specified               |
| <b>Output rate</b>             | Output rate in bps and pps.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | None specified               |
| <b>Statistics last cleared</b> | Time when the statistics for the interface were last set to zero.                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive</b>      |
| <b>Traffic statistics</b>      | <p>The number of and the rate at which input and output bytes and packets are received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul> | <b>detail extensive</b>      |
| <b>Logical Interface</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |
| <b>Logical interface</b>       | Name of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | All levels                   |
| <b>Index</b>                   | Logical interface index number, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>detail extensive none</b> |

Table 24: GRE show interfaces Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output       |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| SNMP ifIndex                   | Logical interface SNMP interface index number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | detail extensive none |
| Generation                     | Unique number for use by Juniper Networks technical support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | detail extensive      |
| Flags                          | <p>Information about the logical interface. Possible values listed in the “Logical Interface Flags” section under <i>Common Output Fields Description</i>. describe general information about the logical interface.</p> <p>GRE-specific information about the logical interface is indicated by the presence or absence of the following value in this field:</p> <ul style="list-style-type: none"> <li>• <b>Reassemble-Pkts</b>—If the <b>Flags</b> field includes this string, the GRE tunnel is configured to reassemble tunnel packets that were fragmented after tunnel encapsulation.</li> </ul>                               | All levels            |
| IP-Header                      | <p>IP header of the logical interface. If the <b>tunnel key</b> statement is configured, this information is included in the <b>IP Header</b> entry.</p> <p>GRE-specific information about the logical interface is indicated by the presence or absence of the following value in this field:</p> <ul style="list-style-type: none"> <li>• <b>df</b>—If the <b>IP-Header</b> field includes this string immediately following the 16 bits of identification information (that is, if <b>:df:</b> displays after the twelfth byte), the GRE tunnel is configured to allow fragmentation of GRE packets after encapsulation.</li> </ul> | All levels            |
| Encapsulation                  | Encapsulation on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | All levels            |
| Copy-tos-to-outer-ip-header    | <p>Status of type of service (ToS) bits in the GRE packet header:</p> <ul style="list-style-type: none"> <li>• <b>On</b>—ToS bits were copied from the payload packet header into the header of the IP packet sent through the GRE tunnel.</li> <li>• <b>Off</b>—ToS bits were not copied from the payload packet header and are set to 0 in the GRE packet header.</li> </ul> <p><b>NOTE:</b> EX Series switches do not support copying ToS bits to the encapsulated packet, so the value of this field is always <b>Off</b> in switch output.</p>                                                                                    | detail extensive      |
| Gre keepalives configured      | <p>Indicates whether a GRE keepalive time and hold time are configured for the GRE tunnel.</p> <p><b>NOTE:</b> EX Series switches do not support configuration of GRE tunnel keepalive times and hold times, so the value of this field is always <b>Off</b> in switch output.</p>                                                                                                                                                                                                                                                                                                                                                     | detail extensive      |
| Gre keepalives adjacency state | Status of the other end of the GRE tunnel: <b>Up</b> or <b>Down</b> . If keepalive messages are not received by either end of the GRE tunnel within the hold-time period, the GRE keepalive adjacency state is down even when the GRE tunnel is up.                                                                                                                                                                                                                                                                                                                                                                                    | detail extensive      |
| Input packets                  | Number of packets received on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | None specified        |
| Output packets                 | Number of packets transmitted on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | None specified        |

Table 24: GRE show interfaces Output Fields (*continued*)

| Field Name                    | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Level of Output              |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Traffic statistics</b>     | <p>Rate of bytes and packets received and transmitted on the logical interface. These statistics are the sum of the local and transit statistics. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes awhile (generally, less than 1 second) for this counter to stabilize.</p> <ul style="list-style-type: none"> <li>• <b>Input rate</b>—Rate of bits and packets received on the interface.</li> <li>• <b>Output rate</b>—Rate of bits and packets transmitted on the interface.</li> </ul> | <b>detail extensive</b>      |
| <b>Local statistics</b>       | Statistics for traffic received from and transmitted to the Routing Engine. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes awhile (generally, less than 1 second) for this counter to stabilize.                                                                                                                                                                                                                                                                                          | <b>detail extensive</b>      |
| <b>Transit statistics</b>     | Statistics for traffic transiting the router. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes awhile (generally, less than 1 second) for this counter to stabilize.                                                                                                                                                                                                                                                                                                                        | <b>detail extensive none</b> |
| <b>Protocol</b>               | Protocol family configured on the logical interface, such as <b>iso</b> , <b>inet6</b> , or <b>mpls</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive none</b> |
| <b><i>protocol-family</i></b> | Protocol family configured on the logical interface. If the protocol is <b>inet</b> , the IP address of the interface is also displayed.                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>brief</b>                 |
| <b>MTU</b>                    | MTU size on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>detail extensive none</b> |
| <b>Generation</b>             | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>detail extensive</b>      |
| <b>Route table</b>            | Routing table in which the logical interface address is located. For example, <b>0</b> refers to the routing table <b>inet.0</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>detail extensive</b>      |
| <b>Flags</b>                  | Information about the protocol family flags. Possible values are described in the “Family Flags” section under <i>Common Output Fields Description</i> .                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive none</b> |
| <b>Addresses, Flags</b>       | Information about the address flags. Possible values are described in the “Addresses Flags” section under <i>Common Output Fields Description</i> .                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>detail extensive none</b> |
| <b>Destination</b>            | IP address of the remote side of the connection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail extensive none</b> |
| <b>Local</b>                  | IP address of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>detail extensive none</b> |
| <b>Broadcast</b>              | Broadcast address of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>detail extensive none</b> |
| <b>Generation</b>             | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>detail extensive</b>      |

## Sample Output

### show interfaces (GRE)

```
user@host> show interfaces gr-1/2/0
Physical interface: gr-0/0/0, Enabled, Physical link is Up
 Interface index: 132, SNMP ifIndex: 26
 Type: GRE, Link-level type: GRE, MTU: Unlimited, Speed: 800mbps
 Device flags : Present Running
 Interface flags: Point-To-Point SNMP-Traps
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)

Logical interface gr-0/0/0.0 (Index 68) (SNMP ifIndex 47)
 Flags: Point-To-Point SNMP-Traps 16384
 IP-Header 1.1.1.2:1.1.1.1:47:df:64:0000000000000000 Encapsulation: GRE-NULL
 Input packets : 0
 Output packets: 0
 Protocol inet, MTU: 1476
 Flags: None
 Addresses, Flags: Is-Primary
 Local: 1.10.1.1
```

### show interfaces brief (GRE)

```
user@host> show interfaces gr-1/2/0 brief
Physical interface: gr-1/2/0, Enabled, Physical link is Up
 Type: GRE, Link-level type: GRE, MTU: Unlimited, Speed: 800mbps
 Device flags : Present Running
 Interface flags: Point-To-Point SNMP-Traps

Logical interface gr-1/2/0.0
 Flags: Hardware-Down Point-To-Point SNMP-Traps 0x4000
 IP-Header 10.10.0.2:10.10.0.1:47:df:64:0000000000000000
 Encapsulation: GRE-NULL
 inet 10.100.0.1/30
 mpls
```

### show interfaces detail (GRE)

```
user@host> show interfaces gr-1/2/0 detail
Physical interface: gr-0/0/0, Enabled, Physical link is Up
 Interface index: 132, SNMP ifIndex: 26, Generation: 13
 Type: GRE, Link-level type: GRE, MTU: Unlimited, Speed: 800mbps
 Hold-times : Up 0 ms, Down 0 ms
 Device flags : Present Running
 Interface flags: Point-To-Point SNMP-Traps
 Statistics last cleared: Never
 Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps

Logical interface gr-0/0/0.0 (Index 68) (SNMP ifIndex 47) (Generation 8)
 Flags: Point-To-Point SNMP-Traps 16384
 IP-Header 1.1.1.2:1.1.1.1:47:df:64:0000000000000000 Encapsulation: GRE-NULL
 Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
```

```

Output packets: 0
Local statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Transit statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps
Protocol inet, MTU: 1476, Generation: 12, Route table: 0
Flags: None
Addresses, Flags: Is-Primary
Destination: Unspecified, Local: 1.10.1.1, Broadcast: Unspecified,
Generation: 15

```

### show interfaces detail (GRE) on an EX4200 Virtual Chassis Member Switch

```

user@switch> show interfaces gr-2/0/15 detail
Physical interface: gr-2/0/15, Enabled, Physical link is Up
Interface index: 195, SNMP ifIndex: 846, Generation: 198
Type: GRE, Link-level type: GRE, MTU: Unlimited, Speed: 1000mbps
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:1f:12:38:0f:d2, Hardware address: 00:1f:12:38:0f:d2
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps
Statistics last cleared: 2011-09-14 17:43:15 UTC (00:00:18 ago)
Traffic statistics:
Input bytes : 5600636 0 bps
Output bytes : 5600636 0 bps
Input packets: 20007 0 pps
Output packets: 20007 0 pps
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

Logical interface gr-2/0/15.0 (Index 75) (SNMP ifIndex 847) (HW Token 4093)
(Generation 140)
Flags: Point-To-Point SNMP-Traps 0x0
IP-Header 180.20.30.2:180.20.3:47:df:64:0000000000000000
Encapsulation: GRE-NULL
Copy-tos-to-outer-ip-header: Off
Gre keepalives configured: Off, Gre keepalives adjacency state: down
Traffic statistics:
Input bytes : 5600886
Output bytes : 2881784
Input packets: 20010
Output packets: 10018
Local statistics:
Input bytes : 398
Output bytes : 264
Input packets: 5
Output packets: 3
Transit statistics:
Input bytes : 5600488 0 bps
Output bytes : 2881520 0 bps
Input packets: 20005 0 pps
Output packets: 10015 0 pps

```

```
Protocol inet, Generation: 159, Route table: 0
Flags: None
Addresses, Flags: Is-Preferred Is-Primary
 Destination: 90.90.90/24, Local: 90.90.90.10, Broadcast: 90.90.90.255,
 Generation: 144
```

```
Logical interface gr-2/0/15.1 (Index 80) (SNMP ifIndex 848) (HW Token 4088)
(Generation 150)
```

```
Flags: Point-To-Point SNMP-Traps 0x0
IP-Header 160.20.40.2:160.20.30.1:47:df:64:0000000000000000
Encapsulation: GRE-NULL
Copy-tos-to-outer-ip-header: Off
Gre keepalives configured: Off, Gre keepalives adjacency state: down
```

```
Traffic statistics:
```

```
Input bytes : 260
Output bytes : 2880148
Input packets: 4
Output packets: 10002
```

```
Local statistics:
```

```
Input bytes : 112
Output bytes : 0
Input packets: 2
Output packets: 0
```

```
Transit statistics:
```

```
Input bytes : 148 0 bps
Output bytes : 2880148 0 bps
Input packets: 2 0 pps
Output packets: 10002 0 pps
```

```
Protocol inet, Generation: 171, Route table: 0
```

```
Flags: None
```

```
Addresses, Flags: Is-Preferred Is-Primary
```

```
 Destination: 70.70.70/24, Local: 70.70.70.10, Broadcast: 70.70.70.255,
 Generation: 160
```

### [show interfaces extensive \(GRE\)](#)

The output for the **show interfaces extensive** command is identical to that for the **show interfaces detail** command. For sample output, see [show interfaces detail \(GRE\) on page 236](#) and [show interfaces detail \(GRE\) on an EX4200 Virtual Chassis Member Switch on page 237](#).

## show interfaces irb

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>show interfaces irb &lt;brief   detail   extensive   terse&gt; &lt;descriptions&gt; &lt;media&gt; &lt;routing-instance <i>instance-name</i>&gt; &lt;snmp-index <i>snmp-index</i>&gt; &lt;statistics&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Release Information</b>      | <p>Command introduced in Junos OS Release 12.3R2.</p> <p>Command introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Command introduced in Junos OS Release 13.2 for the QFX Series</p>                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | Display integrated routing and bridging interfaces information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Options</b>                  | <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b>descriptions</b>—(Optional) Display interface description strings.</p> <p><b>media</b>—(Optional) Display media-specific information about network interfaces.</p> <p><b>routing-instance <i>instance-name</i></b>—(Optional) Display information for the interface with the specified SNMP index.</p> <p><b>snmp-index <i>snmp-index</i></b>—(Optional) Display information for the interface with the specified SNMP index.</p> <p><b>statistics</b>—(Optional) Display static interface statistics.</p> |
| <b>Additional Information</b>   | Integrated routing and bridging (IRB) provides simultaneous support for Layer 2 bridging and Layer 3 IP routing on the same interface. IRB enables you to route local packets to another routed interface or to another VLAN that has a Layer 3 protocol configured.                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>List of Sample Output</b>    | <p><a href="#">show interfaces irb extensive on page 243</a></p> <p><a href="#">show interfaces irb snmp-index on page 244</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Output Fields</b>            | <a href="#">Table 25 on page 239</a> lists the output fields for the <b>show interfaces irb</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                    |

**Table 25: show interfaces irb Output Fields**

| Field Name                | Field Description                                                                                                                             | Level of Output |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Physical Interface</b> |                                                                                                                                               |                 |
| <b>Physical interface</b> | Name of the physical interface.                                                                                                               | All levels      |
| <b>Enabled</b>            | State of the physical interface. Possible values are described in the “Enabled Field” section under <i>Common Output Fields Description</i> . | All levels      |

Table 25: show interfaces irb Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                                                                                                          | Level of Output                    |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| <b>Proto</b>                   | Protocol configured on the interface.                                                                                                                                                                                                                      | <b>terse</b>                       |
| <b>Interface index</b>         | Physical interface index number, which reflects its initialization sequence.                                                                                                                                                                               | <b>detail extensive none</b>       |
| <b>SNMP ifIndex</b>            | SNMP index number for the physical interface.                                                                                                                                                                                                              | <b>detail extensive none</b>       |
| <b>Type</b>                    | Physical interface type.                                                                                                                                                                                                                                   | <b>detail extensive none</b>       |
| <b>Link-level type</b>         | Encapsulation being used on the physical interface.                                                                                                                                                                                                        | <b>detail extensive brief none</b> |
| <b>MTU</b>                     | MTU size on the physical interface.                                                                                                                                                                                                                        | <b>detail extensive brief none</b> |
| <b>Clocking</b>                | Reference clock source: <b>Internal</b> or <b>External</b> . Always unspecified on IRB interfaces.                                                                                                                                                         | <b>detail extensive brief</b>      |
| <b>Speed</b>                   | Speed at which the interface is running. Always unspecified on IRB interfaces.                                                                                                                                                                             | <b>detail extensive brief</b>      |
| <b>Device flags</b>            | Information about the physical device. Possible values are described in the “Device Flags” section under <i>Common Output Fields Description</i> .                                                                                                         | <b>detail extensive brief none</b> |
| <b>Interface flags</b>         | Information about the interface. Possible values are described in the “Interface Flags” section under <i>Common Output Fields Description</i> .                                                                                                            | <b>detail extensive brief none</b> |
| <b>Link type</b>               | Physical interface link type: <b>full duplex</b> or <b>half duplex</b> .                                                                                                                                                                                   | <b>detail extensive none</b>       |
| <b>Link flags</b>              | Information about the link. Possible values are described in the “Links Flags” section under <i>Common Output Fields Description</i> .                                                                                                                     | <b>detail extensive none</b>       |
| <b>Physical Info</b>           | Physical interface information.                                                                                                                                                                                                                            | All levels                         |
| <b>Hold-times</b>              | Current interface hold-time up and hold-time down, in milliseconds.                                                                                                                                                                                        | <b>detail extensive</b>            |
| <b>Current address</b>         | Configured MAC address.                                                                                                                                                                                                                                    | <b>detail extensive none</b>       |
| <b>Hardware address</b>        | MAC address of the hardware.                                                                                                                                                                                                                               | <b>detail extensive none</b>       |
| <b>Alternate link address</b>  | Backup address of the link.                                                                                                                                                                                                                                | <b>detail extensive</b>            |
| <b>Last flapped</b>            | Date, time, and how long ago the interface went from down to up. The format is <b>Last flapped: year-month-day hours:minutes:seconds timezone (hours:minutes:seconds ago)</b> . For example, <b>Last flapped: 2002-04-26 10:52:40 PDT (04:33:20 ago)</b> . | <b>detail extensive none</b>       |
| <b>Statistics last cleared</b> | Time when the statistics for the interface were last set to zero.                                                                                                                                                                                          | <b>detail extensive</b>            |



Table 25: show interfaces irb Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Level of Output         |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Traffic statistics</b>      | <p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive</b> |
| <b>IPv6 transit statistics</b> | <p>Number of IPv6 transit bytes and packets received and transmitted on the physical interface if IPv6 statistics tracking is enabled.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>detail extensive</b> |
| <b>Input errors</b>            | <p>Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• <b>Errors</b>—Sum of the incoming frame aborts and FCS errors.</li> <li>• <b>Drops</b>—Number of packets dropped by the input queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• <b>Framing errors</b>—Number of packets received with an invalid frame checksum (FCS).</li> <li>• <b>Runts</b>—Number of frames received that are smaller than the runt threshold.</li> <li>• <b>Giants</b>—Number of frames received that are larger than the giant threshold.</li> <li>• <b>Policed discards</b>—Number of frames that the incoming packet match code discarded because they were not recognized or not of interest. Usually, this field reports protocols that the Junos OS does not handle.</li> <li>• <b>Resource errors</b>—Sum of transmit drops.</li> </ul>           | <b>detail extensive</b> |
| <b>Output errors</b>           | <p>Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• <b>Carrier transitions</b>—Number of times the interface has gone from <b>down</b> to <b>up</b>. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the DPC is malfunctioning.</li> <li>• <b>Errors</b>—Sum of the outgoing frame aborts and FCS errors.</li> <li>• <b>Drops</b>—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• <b>MTU errors</b>—Number of packets whose size exceeded the MTU of the interface.</li> <li>• <b>Resource errors</b>—Sum of transmit drops.</li> </ul> | <b>detail extensive</b> |

#### Logical Interface

Table 25: show interfaces irb Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output                 |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| <b>Logical interface</b>       | Name of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | All levels                      |
| <b>Index</b>                   | Index number of the logical interface (which reflects its initialization sequence).                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive</b><br>none |
| <b>SNMP ifIndex</b>            | SNMP interface index number of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive</b><br>none |
| <b>Generation</b>              | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>detail extensive</b>         |
| <b>Flags</b>                   | Information about the logical interface. Possible values are described in the "Logical Interface Flags" section under <i>Common Output Fields Description</i> .                                                                                                                                                                                                                                                                                                                                        | <b>detail extensive</b>         |
| <b>Encapsulation</b>           | Encapsulation on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive</b>         |
| <b>Bandwidth</b>               | Speed at which the interface is running.                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive</b>         |
| <b>Routing Instance</b>        | Routing instance IRB is configured under.                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive</b>         |
| <b>Bridging Domain</b>         | Bridging domain IRB is participating in.                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive</b>         |
| <b>Traffic statistics</b>      | <p>Number and rate of bytes and packets received and transmitted on the logical interface.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul>                                             | <b>detail extensive</b>         |
| <b>IPv6 transit statistics</b> | <p>Number of IPv6 transit bytes and packets received and transmitted on the logical interface if IPv6 statistics tracking is enabled.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul> | <b>detail extensive</b>         |
| <b>Local statistics</b>        | Statistics for traffic received from and transmitted to the Routing Engine.                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail extensive</b>         |
| <b>Transit statistics</b>      | Statistics for traffic transiting the router.                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>detail extensive</b>         |
| <b>Protocol</b>                | Protocol family configured on the local interface. Possible values are described in the "Protocol Field" section under <i>Common Output Fields Description</i> .                                                                                                                                                                                                                                                                                                                                       | <b>detail extensive</b>         |
| <b>MTU</b>                     | Maximum transmission unit size on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive</b>         |
| <b>Maximum labels</b>          | Maximum number of MPLS labels configured for the MPLS protocol family on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                        | <b>detail extensive</b><br>none |

Table 25: show interfaces irb Output Fields (*continued*)

| Field Name              | Field Description                                                                                                                                               | Level of Output         |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Generation</b>       | Unique number for use by Juniper Networks technical support only.                                                                                               | <b>detail extensive</b> |
| <b>Route table</b>      | Routing table in which the logical interface address is located. For example, 0 refers to the routing table inet.0.                                             | <b>detail extensive</b> |
| <b>Addresses, Flags</b> | Information about address flags. Possible values are described in the “Addresses Flags” section under <i>Common Output Fields Description</i> .                 | <b>detail extensive</b> |
| <b>Policer</b>          | The policer that is to be evaluated when packets are received or transmitted on the interface.                                                                  | <b>detail extensive</b> |
| <b>Flags</b>            | Information about the logical interface. Possible values are described in the “Logical Interface Flags” section under <i>Common Output Fields Description</i> . | <b>detail extensive</b> |

## Sample Output

### show interfaces irb extensive

```

user@host> show interfaces irb extensive
Physical interface: irb, Enabled, Physical link is Up
 Interface index: 129, SNMP ifIndex: 23, Generation: 130
 Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
 Speed: Unspecified
 Device flags : Present Running
 Interface flags: SNMP-Traps
 Link type : Full-Duplex
 Link flags : None
 Physical info : Unspecified
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 02:00:00:00:00:30, Hardware address: 02:00:00:00:00:30
 Alternate link address: Unspecified
 Last flapped : Never
 Statistics last cleared: Never
 Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets : 0
 Output packets: 0
 IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets : 0
 Output packets: 0
 Input errors:
 Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
 Output errors:
 Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0

Logical interface irb.0 (Index 68) (SNMP ifIndex 70) (Generation 143)
 Flags: Hardware-Down SNMP-Traps 0x4000 Encapsulation: ENET2
 Bandwidth: 1000mbps
 Routing Instance: customer_0 Bridging Domain: bd0

```

```

Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Local statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Protocol inet, MTU: 1500, Generation: 154, Route table: 0
 Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
 Destination: 10.51.1/24, Local: 10.51.1.2, Broadcast: 10.51.1.255,
 Generation: 155
Protocol multiservice, MTU: 1500, Generation: 155, Route table: 0
 Flags: Is-Primary
 Policer: Input: __default_arp_policer

```

#### show interfaces irb snmp-index

```

user@host> show interfaces irb snmp-index 25
Physical interface: irb, Enabled, Physical link is Up
 Interface index: 128, SNMP ifIndex: 25
 Type: Ethernet, Link-level type: Ethernet, MTU: 1514
 Device flags : Present Running
 Interface flags: SNMP-Traps
 Link type : Full-Duplex
 Link flags : None
 Current address: 02:00:00:00:00:30, Hardware address: 02:00:00:00:00:30
 Last flapped : Never
 Input packets : 0
 Output packets: 0

Logical interface irb.0 (Index 68) (SNMP ifIndex 70)
 Flags: Hardware-Down SNMP-Traps 0x4000 Encapsulation: ENET2
 Bandwidth: 1000mbps
 Routing Instance: customer_0 Bridging Domain: bd0
 Input packets : 0
 Output packets: 0
 Protocol inet, MTU: 1500
 Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
 Destination: 10.51.1/24, Local: 10.51.1.2, Broadcast: 10.51.1.255
 Protocol multiservice, MTU: 1500
 Flags: Is-Primary

```

## show interfaces queue

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre>show interfaces queue &lt;aggregate   remaining-traffic&gt; &lt;both-ingress-egress&gt; &lt;egress&gt; &lt;forwarding-class forwarding-class&gt; &lt;ingress&gt; &lt;interface-name interface-name&gt; &lt;l2-statistics&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b> | <p>Command introduced before Junos OS Release 7.4.</p> <p><b>both-ingress-egress</b>, <b>egress</b>, and <b>ingress</b> options introduced in Junos OS Release 7.6.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p><b>l2-statistics</b> option introduced in Junos OS Release 12.1.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>         | Display class-of-service (CoS) queue information for physical interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>             | <p><b>none</b>—Show detailed CoS queue statistics for all physical interfaces.</p> <p><b>aggregate</b>—(Optional) Display the aggregated queuing statistics of all logical interfaces that have traffic-control profiles configured. (Not on the QFX Series.)</p> <p><b>both-ingress-egress</b>—(Optional) On Gigabit Ethernet Intelligent Queuing 2 (IQ2) PICs, display both ingress and egress queue statistics. (Not on the QFX Series.)</p> <p><b>egress</b>—(Optional) Display egress queue statistics.</p> <p><b>forwarding-class forwarding-class</b>—(Optional) Forwarding class name for this queue. Shows detailed CoS statistics for the queue associated with the specified forwarding class.</p> <p><b>ingress</b>—(Optional) On Gigabit Ethernet IQ2 PICs, display ingress queue statistics. (Not on the QFX Series.)</p> <p><b>interface-name interface-name</b>—(Optional) Show detailed CoS queue statistics for the specified interface.</p> <p><b>l2-statistics</b>—(Optional) Display Layer 2 statistics for MLPPP, FRF.15, and FRF.16 bundles</p> <p><b>remaining-traffic</b>—(Optional) Display the remaining-traffic queue statistics of all logical interfaces that have traffic-control profiles configured.</p> |

### Overhead for Layer 2 Statistics

Transmitted packets and transmitted byte counts are displayed for the Layer 2 level with the addition of encapsulation overheads applied for fragmentation, as shown in [Table 26 on page 246](#). Others counters, such as packets and bytes queued (input) and drop counters, are displayed at the Layer 3 level. In the case of link fragmentation and interleaving (LFI) for which fragmentation is not applied, corresponding Layer 2 overheads are added, as shown in [Table 26 on page 246](#).

Table 26: Layer 2 Overhead and Transmitted Packets or Byte Counts

| Protocol       | Fragmentation       |                                   | LFI |
|----------------|---------------------|-----------------------------------|-----|
|                | First fragmentation | Second to <i>n</i> fragmentations |     |
|                | Bytes               | Bytes                             |     |
| MLPPP (Long)   | 13                  | 12                                | 8   |
| MLPPP (short)  | 11                  | 10                                | 8   |
| MLFR (FRF15)   | 12                  | 10                                | 8   |
| MFR (FRF16)    | 10                  | 8                                 | -   |
| MCMLPPP(Long)  | 13                  | 12                                | -   |
| MCMLPPP(Short) | 11                  | 10                                | -   |

#### Layer 2 Statistics—Fragmentation Overhead Calculation

##### MLPPP/MC-MLPPP Overhead details:

=====

##### Fragment 1:

```

Outer PPP header : 4 bytes
Long or short sequence MLPPP header : 4 bytes or 2 bytes
Inner PPP header : 1 byte
HDLC flag and FCS bytes : 4 bytes

```

##### Fragments 2 .. n :

```

Outer PPP header : 4 bytes
Long or short sequence MLPPP header : 4 bytes or 2 bytes
HDLC flag and FCS bytes : 4 bytes

```

##### MLFR (FRF15) Overhead details:

=====

##### Fragment 1:

```

Framereelay header : 2 bytes
Control,NLPID : 2 bytes
Fragmentaion header : 2 bytes
Inner proto : 2 bytes
HDLC flag and FCS : 4 bytes

```

##### Fragments 2 ...n :

```

Framereelay header : 2 bytes
Control,NLPID : 2 bytes
Fragmentaion header : 2 bytes
HDLC flag and FCS : 4 bytes

```

##### MFR (FRF16) Overhead details:

=====

```

Fragment 1:
 Fragmentation header : 2 bytes
 Framereelay header : 2 bytes
 Inner proto : 2 bytes
 HDLC flag and FCS : 4 bytes

Fragments 2 ...n :
 Fragmentation header : 2 bytes
 Framereelay header : 2 bytes
 HDLC flag and FCS : 4 bytes

```

## Overhead with LFI

```

MLPPP(Long & short sequence):
=====
 Outer PPP header : 4 bytes
 HDLC flag and FCS : 4 bytes

```

```

MLFR (FRF15):
=====
 Framereelay header : 2 bytes
 Control,NLPID : 2 bytes
 HDLC flag and FCS : 4 bytes

```

The following examples show overhead for different cases:

- A 1000-byte packet is sent to a mlppp bundle without any fragmentation. At the Layer 2 level, bytes transmitted is 1013 in 1 packet. This overhead is for MLPPP long sequence encap.
- A 1000-byte packet is sent to a mlppp bundle with a fragment threshold of 250byte. At the Layer 2 level, bytes transmitted is 1061 bytes in 5 packets.
- A 1000-byte LFI packet is sent to an mlppp bundle. At the Layer 2 level, bytes transmitted is 1008 in 1 packet.

**remaining-traffic**—(Optional) Display the queuing statistics of all logical interfaces that do not have traffic-control profiles configured. (Not on the QFX Series.)

## Additional Information

For rate-limited interfaces hosted on Modular Interface Cards (MICs), Modular Port Concentrators (MPCs), or Enhanced Queuing DPCs, rate-limit packet-drop operations occur *before* packets are queued for transmission scheduling. For such interfaces, the statistics for queued traffic do not include the packets that have already been dropped due to rate limiting, and consequently the displayed statistics for queued traffic are the same as the displayed statistics for transmitted traffic.



**NOTE:** For rate-limited interfaces hosted on other types of hardware, rate-limit packet-drop operations occur *after* packets are queued for transmission scheduling. For these other interface types, the statistics for queued traffic include the packets that are later dropped due to rate limiting, and consequently the displayed statistics for queued traffic equals the sum of the statistics for transmitted and rate-limited traffic.

On M Series routers (except for the M320 and M120 routers), this command is valid only for a PIC installed on an enhanced Flexible PIC Concentrator (FPC).

Queue statistics for aggregated interfaces are supported on the M Series and T Series routers only. Statistics for an aggregated interface are the summation of the queue statistics of the child links of that aggregated interface. You can view the statistics for a child interface by using the **show interfaces statistics** command for that child interface.

When you configure tricolor marking on a 10-port 1-Gigabit Ethernet PIC, for queues 6 and 7 only, the output does not display the number of queued bytes and packets, or the number of bytes and packets dropped because of RED. If you do not configure tricolor marking on the interface, these statistics are available for all queues.

For the 4-port Channelized OC12 IQE PIC and 1-port Channelized OC48 IQE PIC, the **Packet Forwarding Engine Chassis Queues** field represents traffic bound for a particular physical interface on the PIC. For all other PICs, the **Packet Forwarding Engine Chassis Queues** field represents the total traffic bound for the PIC.

For Gigabit Ethernet IQ2 PICs, the **show interfaces queue** command output does not display the number of tail-dropped packets. This limitation does not apply to Packet Forwarding Engine chassis queues.

When fragmentation occurs on the egress interface, the first set of packet counters shows the postfragmentation values. The second set of packet counters (under the **Packet Forwarding Engine Chassis Queues** field) shows the prefragmentation values.

The behavior of the **egress** queues for the **Routing Engine-Generated Traffic** is not same as the configured queue for MLPPP and MFR configurations.

For information about how to configure CoS, see the *Junos OS Network Interfaces Library for Routing Devices*. For related CoS operational mode commands, see the [CLI Explorer](#).

**Required Privilege Level**

view

**List of Sample Output**

[show interfaces queue \(Rate-Limited Interface on a Gigabit Ethernet MIC in an MPC\) on page 253](#)  
[show interfaces queue \(Aggregated Ethernet on a T320 Router\) on page 254](#)  
[show interfaces queue \(Fast Ethernet on a J4300 Router\) on page 256](#)  
[show interfaces queue \(Gigabit Ethernet on a T640 Router\) on page 256](#)  
[show interfaces queue aggregate \(Gigabit Ethernet Enhanced DPC\) on page 257](#)  
[show interfaces queue \(Gigabit Ethernet IQ2 PIC\) on page 261](#)  
[show interfaces queue both-ingress-egress \(Gigabit Ethernet IQ2 PIC\) on page 264](#)  
[show interfaces queue ingress \(Gigabit Ethernet IQ2 PIC\) on page 266](#)  
[show interfaces queue egress \(Gigabit Ethernet IQ2 PIC\) on page 267](#)  
[show interfaces queue remaining-traffic \(Gigabit Ethernet Enhanced DPC\) on page 268](#)  
[show interfaces queue \(Channelized OC12 IQE Type 3 PIC in SONET Mode\) on page 271](#)  
[show interfaces queue \(QFX Series\) on page 281](#)  
[show interfaces queue l2-statistics \(lsq interface\) on page 282](#)  
[show interfaces queue lsq \(lsq-ifd\) on page 282](#)



**Output Fields** Table 27 on page 249 lists the output fields for the **show interfaces queue** command. Output fields are listed in the approximate order in which they appear.

**Table 27: show interfaces queue Output Fields**

| Field Name                                                                                                                                          | Field Description                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical interface                                                                                                                                  | Name of the physical interface.                                                                                                                                                                                                                                                                                                                                           |
| Enabled                                                                                                                                             | State of the interface. Possible values are described in the “Enabled Field” section under <i>Common Output Fields Description</i> .                                                                                                                                                                                                                                      |
| Interface index                                                                                                                                     | Physical interface's index number, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                            |
| SNMP ifIndex                                                                                                                                        | SNMP index number for the interface.                                                                                                                                                                                                                                                                                                                                      |
| Forwarding classes supported                                                                                                                        | Total number of forwarding classes supported on the specified interface.                                                                                                                                                                                                                                                                                                  |
| Forwarding classes in use                                                                                                                           | Total number of forwarding classes in use on the specified interface.                                                                                                                                                                                                                                                                                                     |
| Ingress queues supported                                                                                                                            | On Gigabit Ethernet IQ2 PICs only, total number of ingress queues supported on the specified interface.                                                                                                                                                                                                                                                                   |
| Ingress queues in use                                                                                                                               | On Gigabit Ethernet IQ2 PICs only, total number of ingress queues in use on the specified interface.                                                                                                                                                                                                                                                                      |
| Output queues supported                                                                                                                             | Total number of output queues supported on the specified interface.                                                                                                                                                                                                                                                                                                       |
| Output queues in use                                                                                                                                | Total number of output queues in use on the specified interface.                                                                                                                                                                                                                                                                                                          |
| Egress queues supported                                                                                                                             | Total number of egress queues supported on the specified interface.                                                                                                                                                                                                                                                                                                       |
| Egress queues in use                                                                                                                                | Total number of egress queues in use on the specified interface.                                                                                                                                                                                                                                                                                                          |
| Queue counters (Ingress)                                                                                                                            | CoS queue number and its associated user-configured forwarding class name. Displayed on IQ2 interfaces. <ul style="list-style-type: none"> <li>• <b>Queued packets</b>—Number of queued packets.</li> <li>• <b>Transmitted packets</b>—Number of transmitted packets.</li> <li>• <b>Dropped packets</b>—Number of packets dropped by the ASIC's RED mechanism.</li> </ul> |
| Burst size                                                                                                                                          | (Logical interfaces on IQ PICs only) Maximum number of bytes up to which the logical interface can burst. The burst size is based on the shaping rate applied to the interface.                                                                                                                                                                                           |
| The following output fields are applicable to both interface component and Packet Forwarding component in the <b>show interfaces queue</b> command: |                                                                                                                                                                                                                                                                                                                                                                           |
| Queue                                                                                                                                               | Queue number.                                                                                                                                                                                                                                                                                                                                                             |
| Forwarding classes                                                                                                                                  | Forwarding class name.                                                                                                                                                                                                                                                                                                                                                    |

Table 27: show interfaces queue Output Fields (*continued*)

| Field Name                  | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Queued Packets</b>       | <p>Number of packets queued to this queue.</p> <p><b>NOTE:</b> For Gigabit Ethernet IQ2 interfaces, the Queued Packets count is calculated by the Junos OS interpreting one frame buffer as one packet. If the queued packets are very large or very small, the calculation might not be completely accurate for transit traffic. The count is completely accurate for traffic terminated on the router.</p> <p>For rate-limited interfaces hosted on MICs or MPCs only, this statistic does not include traffic dropped due to rate limiting. For more information, see <a href="#">“Additional Information” on page 247</a>.</p> |
| <b>Queued Bytes</b>         | <p>Number of bytes queued to this queue. The byte counts vary by interface hardware. For more information, see <a href="#">Table 28 on page 252</a>.</p> <p>For rate-limited interfaces hosted on MICs or MPCs only, this statistic does not include traffic dropped due to rate limiting. For more information, see <a href="#">“Additional Information” on page 247</a>.</p>                                                                                                                                                                                                                                                     |
| <b>Transmitted Packets</b>  | <p>Number of packets transmitted by this queue. When fragmentation occurs on the egress interface, the first set of packet counters shows the postfragmentation values. The second set of packet counters (displayed under the <b>Packet Forwarding Engine Chassis Queues</b> field) shows the prefragmentation values.</p> <p><b>NOTE:</b> For Layer 2 statistics, see <a href="#">“Overhead for Layer 2 Statistics” on page 245</a></p>                                                                                                                                                                                          |
| <b>Transmitted Bytes</b>    | <p>Number of bytes transmitted by this queue. The byte counts vary by interface hardware. For more information, see <a href="#">Table 28 on page 252</a>.</p> <p><b>NOTE:</b> On MX Series routers, this number can be inaccurate when you issue the command for a physical interface repeatedly and in quick succession, because the statistics for the child nodes are collected infrequently. Wait ten seconds between successive iterations to avoid this situation.</p> <p><b>NOTE:</b> For Layer 2 statistics, see <a href="#">“Overhead for Layer 2 Statistics” on page 245</a></p>                                         |
| <b>Tail-dropped packets</b> | Number of packets dropped because of tail drop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>RL-dropped packets</b>   | <p>Number of packets dropped due to rate limiting.</p> <p>For rate-limited interfaces hosted on MICs, MPCs, and Enhanced Queuing DPCs only, this statistic is not included in the queued traffic statistics. For more information, see <a href="#">“Additional Information” on page 247</a>.</p>                                                                                                                                                                                                                                                                                                                                   |
| <b>RL-dropped bytes</b>     | <p>Number of bytes dropped due to rate limiting.</p> <p>For rate-limited interfaces hosted on MICs, MPCs, and Enhanced Queuing DPCs only, this statistic is not included in the queued traffic statistics. For more information, see <a href="#">“Additional Information” on page 247</a>.</p>                                                                                                                                                                                                                                                                                                                                     |

Table 27: show interfaces queue Output Fields (*continued*)

| Field Name          | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RED-dropped packets | <p>Number of packets dropped because of random early detection (RED).</p> <ul style="list-style-type: none"> <li>(M Series and T Series routers only) On M320 and M120 routers and the T Series routers, the total number of dropped packets is displayed. On all other M Series routers, the output classifies dropped packets into the following categories: <ul style="list-style-type: none"> <li><b>Low, non-TCP</b>—Number of low-loss priority non-TCP packets dropped because of RED.</li> <li><b>Low, TCP</b>—Number of low-loss priority TCP packets dropped because of RED.</li> <li><b>High, non-TCP</b>—Number of high-loss priority non-TCP packets dropped because of RED.</li> <li><b>High, TCP</b>—Number of high-loss priority TCP packets dropped because of RED.</li> </ul> </li> <li>(J Series routers and MX Series routers with enhanced DPCs, and T Series routers with enhanced FPCs only) The output classifies dropped packets into the following categories: <ul style="list-style-type: none"> <li><b>Low</b>—Number of low-loss priority packets dropped because of RED.</li> <li><b>Medium-low</b>—Number of medium-low loss priority packets dropped because of RED.</li> <li><b>Medium-high</b>—Number of medium-high loss priority packets dropped because of RED.</li> <li><b>High</b>—Number of high-loss priority packets dropped because of RED.</li> </ul> </li> </ul> <p><b>NOTE:</b> Due to accounting space limitations on certain Type 3 FPCs (which are supported in M320 and T640 routers), this field does not always display the correct value for queue 6 or queue 7 for interfaces on 10-port 1-Gigabit Ethernet PICs.</p> |
| RED-dropped bytes   | <p>Number of bytes dropped because of RED. The byte counts vary by interface hardware. For more information, see <a href="#">Table 28 on page 252</a>.</p> <ul style="list-style-type: none"> <li>(M Series and T Series routers only) On M320 and M120 routers and the T Series routers, only the total number of dropped bytes is displayed. On all other M Series routers, the output classifies dropped bytes into the following categories: <ul style="list-style-type: none"> <li><b>Low, non-TCP</b>—Number of low-loss priority non-TCP bytes dropped because of RED.</li> <li><b>Low, TCP</b>—Number of low-loss priority TCP bytes dropped because of RED.</li> <li><b>High, non-TCP</b>—Number of high-loss priority non-TCP bytes dropped because of RED.</li> <li><b>High, TCP</b>—Number of high-loss priority TCP bytes dropped because of RED.</li> </ul> </li> <li>(J Series routers only) The output classifies dropped bytes into the following categories: <ul style="list-style-type: none"> <li><b>Low</b>—Number of low-loss priority bytes dropped because of RED.</li> <li><b>Medium-low</b>—Number of medium-low loss priority bytes dropped because of RED.</li> <li><b>Medium-high</b>—Number of medium-high loss priority bytes dropped because of RED.</li> <li><b>High</b>—Number of high-loss priority bytes dropped because of RED.</li> </ul> </li> </ul> <p><b>NOTE:</b> Due to accounting space limitations on certain Type 3 FPCs (which are supported in M320 and T640 routers), this field does not always display the correct value for queue 6 or queue 7 for interfaces on 10-port 1-Gigabit Ethernet PICs.</p>                   |

Byte counts vary by interface hardware. [Table 28 on page 252](#) shows how the byte counts on the outbound interfaces vary depending on the interface hardware. [Table 28 on page 252](#) is based on the assumption that outbound interfaces are sending IP traffic with 478 bytes per packet.

Table 28: Byte Count by Interface Hardware

| Interface Hardware               | Output Level                | Byte Count Includes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Comments                                                                                                                                                                                                     |
|----------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gigabit Ethernet IQ and IQE PICs | Interface                   | <p>Queued: 490 bytes per packet, representing 478 bytes of Layer 3 packet + 12 bytes</p> <p>Transmitted: 490 bytes per packet, representing 478 bytes of Layer 3 packet + 12 bytes</p> <p>RED dropped: 496 bytes per packet representing 478 bytes of Layer 3 packet + 18 bytes</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>The 12 additional bytes include 6 bytes for the destination MAC address + 4 bytes for the VLAN + 2 bytes for the Ethernet type.</p> <p>For RED dropped, 6 bytes are added for the source MAC address.</p> |
|                                  | Packet forwarding component | <p>Queued: 478 bytes per packet, representing 478 bytes of Layer 3 packet</p> <p>Transmitted: 478 bytes per packet, representing 478 bytes of Layer 3 packet</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | —                                                                                                                                                                                                            |
| Non-IQ PIC                       | Interface                   | <p>T Series, TX Series, T1600, and MX Series routers:</p> <ul style="list-style-type: none"> <li>• Queued: 478 bytes of Layer 3 packet.</li> <li>• Transmitted: 478 bytes of Layer 3 packet.</li> </ul> <p>T4000 routers with Type 5 FPCs :</p> <ul style="list-style-type: none"> <li>• Queued: 478 bytes of Layer 3 packet + the full Layer 2 overhead including 4 bytes CRC + the full Layer 1 overhead 8 bytes preamble + 12 bytes Inter frame Gap.</li> <li>• Transmitted: 478 bytes of Layer 3 packet + the full Layer 2 overhead including 4 bytes CRC + the full Layer 1 overhead 8 bytes preamble + 12 bytes Interframe Gap.</li> </ul> <p>M Series routers:</p> <ul style="list-style-type: none"> <li>• Queued: 478 bytes of Layer 3 packet.</li> <li>• Transmitted: 478 bytes of Layer 3 packet + the full Layer 2 overhead.</li> </ul> <p>PTX Series Packet Transport Routers:</p> <ul style="list-style-type: none"> <li>• Queued: 478 bytes of Layer 3 packet + the full Layer 2 overhead including 4 bytes FCS + the full Layer 1 overhead of the MAC header DA + SA + EtherType (non-VLAN).</li> <li>• Transmitted: 478 bytes of Layer 3 packet + the full Layer 2 overhead including 4 bytes CRC + the full Layer 1 overhead of the MAC header DA + SA + EtherType (non-VLAN).</li> <li>• RED dropped: 478 bytes of Layer 3 packet + 22 bytes special header. To the TQ, this packet has 4 bytes more than queued or transmitted.</li> </ul> | <p>The Layer 2 overhead is 14 bytes for non-VLAN traffic and 18 bytes for VLAN traffic.</p>                                                                                                                  |

Table 28: Byte Count by Interface Hardware (*continued*)

| Interface Hardware                                   | Output Level                | Byte Count Includes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Comments                                                                                                                           |
|------------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| IQ and IQE PICs with a SONET/SDH interface           | Interface                   | <p>Queued: 482 bytes per packet, representing 478 bytes of Layer 3 packet + 4 bytes</p> <p>Transmitted: 482 bytes per packet, representing 478 bytes of Layer 3 packet + 4 bytes</p> <p>RED dropped: 482 bytes per packet, representing 478 bytes of Layer 3 packet + 4 bytes</p>                                                                                                                                                                                                                                 | The additional 4 bytes are for the Layer 2 Point-to-Point Protocol (PPP) header.                                                   |
|                                                      | Packet forwarding component | <p>Queued: 478 bytes per packet, representing 478 bytes of Layer 3 packet</p> <p>Transmitted: 486 bytes per packet, representing 478 bytes of Layer 3 packet + 8 bytes</p>                                                                                                                                                                                                                                                                                                                                        | For transmitted packets, the additional 8 bytes includes 4 bytes for the PPP header and 4 bytes for a cookie.                      |
| Non-IQ PIC with a SONET/SDH interface                | Interface                   | <p>T Series, TX Series, T1600, and MX Series routers:</p> <ul style="list-style-type: none"> <li>• Queued: 478 bytes of Layer 3 packet.</li> <li>• Transmitted: 478 bytes of Layer 3 packet.</li> </ul> <p>M Series routers:</p> <ul style="list-style-type: none"> <li>• Queued: 478 bytes of Layer 3 packet.</li> <li>• Transmitted: 483 bytes per packet, representing 478 bytes of Layer 3 packet + 5 bytes</li> <li>• RED dropped: 478 bytes per packet, representing 478 bytes of Layer 3 packet</li> </ul> | For transmitted packets, the additional 5 bytes includes 4 bytes for the PPP header and 1 byte for the packet loss priority (PLP). |
| Interfaces configured with Frame Relay Encapsulation | Interface                   | The default Frame Relay overhead is 7 bytes. If you configure the Frame Check Sequence (FCS) to 4 bytes, then the overhead increases to 10 bytes.                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                    |
| 1-port 10-Gigabit Ethernet IQ2 and IQ2-E PICs        | Interface                   | <p>Queued: 478 bytes of Layer 3 packet + the full Layer 2 overhead including CRC.</p> <p>Transmitted: 478 bytes of Layer 3 packet + the full Layer 2 overhead including CRC.</p>                                                                                                                                                                                                                                                                                                                                  | The Layer 2 overhead is 18 bytes for non-VLAN traffic and 22 bytes for VLAN traffic.                                               |
| 4-port 1G IQ2 and IQ2-E PICs                         | Packet forwarding component | Queued: 478 bytes of Layer 3 packet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | —                                                                                                                                  |
| 8-port 1G IQ2 and IQ2-E PICs                         |                             | Transmitted: 478 bytes of Layer 3 packet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                    |

## Sample Output

### show interfaces queue (Rate-Limited Interface on a Gigabit Ethernet MIC in an MPC)

The following example shows queue information for the rate-limited interface ge-4/2/0 on a Gigabit Ethernet MIC in an MPC. For rate-limited queues for interfaces hosted on MICs or MPCs, rate-limit packet drops occur prior to packet output queuing. In the

command output, the nonzero statistics displayed in the **RL-dropped packets** and **RL-dropped bytes** fields quantify the traffic dropped to rate-limit queue 0 output to 10 percent of 1 gigabyte (100 megabits) per second. Because the RL-dropped traffic is not included in the **Queued** statistics, the statistics displayed for queued traffic are the same as the statistics for transmitted traffic.

```
user@host> show interfaces queue ge-4/2/0
Physical interface: ge-4/2/0, Enabled, Physical link is Up
 Interface index: 203, SNMP ifIndex: 1054
 Forwarding classes: 16 supported, 4 in use
 Egress queues: 8 supported, 4 in use
 Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 131300649 141751 pps
 Bytes : 11287964840 99793248 bps
 Transmitted:
 Packets : 131300649 141751 pps
 Bytes : 11287964840 99793248 bps
 Tail-dropped packets : 0 0 pps
 RL-dropped packets : 205050862 602295 pps
 RL-dropped bytes : 13595326612 327648832 bps
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
 Queue: 1, Forwarding classes: expedited-forwarding
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
```

### show interfaces queue (Aggregated Ethernet on a T320 Router)

The following example shows that the aggregated Ethernet interface, **ae1**, has traffic on queues **af1** and **af12**:

```
user@host> show interfaces queue ae1
Physical interface: ae1, Enabled, Physical link is Up
 Interface index: 158, SNMP ifIndex: 33 Forwarding classes: 8 supported, 8 in use
 Output queues: 8 supported, 8 in use
 Queue: 0, Forwarding classes: be
 Queued:
 Packets : 5 0 pps
 Bytes : 242 0 bps
 Transmitted:
 Packets : 5 0 pps
 Bytes : 242 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Queue: 1, Forwarding classes: af1
 Queued:
 Packets : 42603765 595484 pps
```

```

 Bytes : 5453281920 609776496 bps
 Transmitted:
 Packets : 42603765 595484 pps
 Bytes : 5453281920 609776496 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: ef1
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: nc
 Queued:
 Packets : 45 0 pps
 Bytes : 3930 0 bps
 Transmitted:
 Packets : 45 0 pps
 Bytes : 3930 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: af11
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 5, Forwarding classes: ef11
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: af12
 Queued:
 Packets : 31296413 437436 pps
 Bytes : 4005940864 447935200 bps
 Transmitted:
 Packets : 31296413 437436 pps
 Bytes : 4005940864 447935200 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: nc2
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps

```

```

Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps

```

#### show interfaces queue (Fast Ethernet on a J4300 Router)

```

user@host> show interfaces queue fe-4/0/0.0
Logical interface fe-4/0/0.0 (Index 71) (SNMP ifIndex 42)
Forwarding classes: 8 supported, 8 in use
Output queues: 8 supported, 8 in use
Queue: 0, Forwarding classes: be
 Queued:
 Packets : 5240762 3404 pps
 Bytes : 3020710354 15934544 bps
 Transmitted:
 Packets : 5240762 3404 pps
 Bytes : 3020710354 15934544 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
Queue: 1, Forwarding classes: af1
 Queued:
 Packets : 2480391 1650 pps
 Bytes : 1304685666 6945704 bps
 Transmitted:
 Packets : 2478740 1650 pps
 Bytes : 1303817240 6945704 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 1651 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 1651 0 pps
 RED-dropped bytes : 868426 0 bps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 868426 0 pps

```

#### show interfaces queue (Gigabit Ethernet on a T640 Router)

```

user@host> show interfaces queue
Physical interface: ge-7/0/1, Enabled, Physical link is Up
Interface index: 150, SNMP ifIndex: 42
Forwarding classes: 8 supported, 8 in use
Output queues: 8 supported, 8 in use
Queue: 0, Forwarding classes: be
 Queued:

```



```

Packets : 13 0 pps
Bytes : 622 0 bps
Transmitted:
Packets : 13 0 pps
Bytes : 622 0 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: af1
Queued:
Packets : 1725947945 372178 pps
Bytes : 220921336960 381110432 bps
Transmitted:
Packets : 1725947945 372178 pps
Bytes : 220921336960 381110432 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: ef1
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: nc
Queued:
Packets : 571 0 pps
Bytes : 49318 336 bps
Transmitted:
Packets : 571 0 pps
Bytes : 49318 336 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps

```

#### show interfaces queue aggregate (Gigabit Ethernet Enhanced DPC)

```

user@host> show interfaces queue ge-2/2/9 aggregate
Physical interface: ge-2/2/9, Enabled, Physical link is Up
Interface index: 238, SNMP ifIndex: 71
Forwarding classes: 16 supported, 4 in use
Ingress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
Queued:
Packets : 148450735 947295 pps
Bytes : 8016344944 409228848 bps
Transmitted:
Packets : 76397439 487512 pps
Bytes : 4125461868 210602376 bps
Tail-dropped packets : Not Available
RED-dropped packets : 72053285 459783 pps
Low : 72053285 459783 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 3890877444 198626472 bps

```

```

Low : 3890877444 198626472 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
Queued:
Packets : 410278257 473940 pps
Bytes : 22156199518 204742296 bps
Transmitted:
Packets : 4850003 4033 pps
Bytes : 261900162 1742256 bps
Tail-dropped packets : Not Available
RED-dropped packets : 405425693 469907 pps
Low : 405425693 469907 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 21892988124 203000040 bps
Low : 21892988124 203000040 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps
Queue: 3, Forwarding classes: network-control
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps
Forwarding classes: 16 supported, 4 in use
Egress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort

```

```

Queued:
 Packets : 76605230 485376 pps
 Bytes : 5209211400 264044560 bps
Transmitted:
 Packets : 76444631 484336 pps
 Bytes : 5198235612 263478800 bps
Tail-dropped packets : Not Available
RED-dropped packets : 160475 1040 pps
 Low : 160475 1040 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
RED-dropped bytes : 10912300 565760 bps
 Low : 10912300 565760 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
Queued:
 Packets : 4836136 3912 pps
 Bytes : 333402032 2139056 bps
Transmitted:
 Packets : 3600866 1459 pps
 Bytes : 244858888 793696 bps
Tail-dropped packets : Not Available
RED-dropped packets : 1225034 2450 pps
 Low : 1225034 2450 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
RED-dropped bytes : 83302312 1333072 bps
 Low : 83302312 1333072 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 3, Forwarding classes: network-control
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available

```

```

RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps

```

#### Packet Forwarding Engine Chassis Queues:

Queues: 4 supported, 4 in use

Queue: 0, Forwarding classes: best-effort

##### Queued:

```

Packets : 77059796 486384 pps
Bytes : 3544750624 178989576 bps

```

##### Transmitted:

```

Packets : 77059797 486381 pps
Bytes : 3544750670 178988248 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps

```

Queue: 1, Forwarding classes: expedited-forwarding

##### Queued:

```

Packets : 0 0 pps
Bytes : 0 0 bps

```

##### Transmitted:

```

Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps

```

Queue: 2, Forwarding classes: assured-forwarding

##### Queued:

```

Packets : 4846580 3934 pps
Bytes : 222942680 1447768 bps

```

##### Transmitted:

```

Packets : 4846580 3934 pps
Bytes : 222942680 1447768 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps

```

```

 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 3, Forwarding classes: network-control
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps

```

#### show interfaces queue (Gigabit Ethernet IQ2 PIC)

```

user@host> show interfaces queue ge-7/1/3
Physical interface: ge-7/1/3, Enabled, Physical link is Up
 Interface index: 170, SNMP ifIndex: 70 Forwarding classes: 16 supported, 4 in use
 Ingress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 418390039 10 pps
 Bytes : 38910269752 7440 bps
 Transmitted:
 Packets : 418390039 10 pps
 Bytes : 38910269752 7440 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps

```

```

RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: network-control
Queued:
 Packets : 7055 1 pps
 Bytes : 451552 512 bps
Transmitted:
 Packets : 7055 1 pps
 Bytes : 451552 512 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Forwarding classes: 16 supported, 4 in use Egress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
Queued:
 Packets : 1031 0 pps
 Bytes : 143292 0 bps
Transmitted:
 Packets : 1031 0 pps
 Bytes : 143292 0 bps
Tail-dropped packets : Not Available
RL-dropped packets : 0 0 pps
RL-dropped bytes : 0 0 bps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
RL-dropped packets : 0 0 pps
RL-dropped bytes : 0 0 bps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
RL-dropped packets : 0 0 pps
RL-dropped bytes : 0 0 bps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: network-control
Queued:
 Packets : 77009 11 pps
 Bytes : 6894286 7888 bps
Transmitted:
 Packets : 77009 11 pps
 Bytes : 6894286 7888 bps
Tail-dropped packets : Not Available
RL-dropped packets : 0 0 pps
RL-dropped bytes : 0 0 bps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps

```

## Packet Forwarding Engine Chassis Queues:

Queues: 4 supported, 4 in use

Queue: 0, Forwarding classes: best-effort

## Queued:

|         |   |        |       |
|---------|---|--------|-------|
| Packets | : | 1031   | 0 pps |
| Bytes   | : | 147328 | 0 bps |

## Transmitted:

|                      |   |        |       |
|----------------------|---|--------|-------|
| Packets              | : | 1031   | 0 pps |
| Bytes                | : | 147328 | 0 bps |
| Tail-dropped packets | : | 0      | 0 pps |
| RED-dropped packets  | : | 0      | 0 pps |
| Low, non-TCP         | : | 0      | 0 pps |
| Low, TCP             | : | 0      | 0 pps |
| High, non-TCP        | : | 0      | 0 pps |
| High, TCP            | : | 0      | 0 pps |
| RED-dropped bytes    | : | 0      | 0 bps |
| Low, non-TCP         | : | 0      | 0 bps |
| Low, TCP             | : | 0      | 0 bps |
| High, non-TCP        | : | 0      | 0 bps |
| High, TCP            | : | 0      | 0 bps |

Queue: 1, Forwarding classes: expedited-forwarding

## Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

## Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low, non-TCP         | : | 0 | 0 pps |
| Low, TCP             | : | 0 | 0 pps |
| High, non-TCP        | : | 0 | 0 pps |
| High, TCP            | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low, non-TCP         | : | 0 | 0 bps |
| Low, TCP             | : | 0 | 0 bps |
| High, non-TCP        | : | 0 | 0 bps |
| High, TCP            | : | 0 | 0 bps |

Queue: 2, Forwarding classes: assured-forwarding

## Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

## Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low, non-TCP         | : | 0 | 0 pps |
| Low, TCP             | : | 0 | 0 pps |
| High, non-TCP        | : | 0 | 0 pps |
| High, TCP            | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low, non-TCP         | : | 0 | 0 bps |
| Low, TCP             | : | 0 | 0 bps |
| High, non-TCP        | : | 0 | 0 bps |
| High, TCP            | : | 0 | 0 bps |

Queue: 3, Forwarding classes: network-control

## Queued:

|         |   |          |          |
|---------|---|----------|----------|
| Packets | : | 94386    | 12 pps   |
| Bytes   | : | 13756799 | 9568 bps |

## Transmitted:

|                      |   |          |          |
|----------------------|---|----------|----------|
| Packets              | : | 94386    | 12 pps   |
| Bytes                | : | 13756799 | 9568 bps |
| Tail-dropped packets | : | 0        | 0 pps    |
| RED-dropped packets  | : | 0        | 0 pps    |
| Low, non-TCP         | : | 0        | 0 pps    |
| Low, TCP             | : | 0        | 0 pps    |
| High, non-TCP        | : | 0        | 0 pps    |
| High, TCP            | : | 0        | 0 pps    |
| RED-dropped bytes    | : | 0        | 0 bps    |
| Low, non-TCP         | : | 0        | 0 bps    |
| Low, TCP             | : | 0        | 0 bps    |
| High, non-TCP        | : | 0        | 0 bps    |
| High, TCP            | : | 0        | 0 bps    |

### show interfaces queue both-ingress-egress (Gigabit Ethernet IQ2 PIC)

```

user@host> show interfaces queue ge-6/2/0 both-ingress-egress
Physical interface: ge-6/2/0, Enabled, Physical link is Up
 Interface index: 175, SNMP ifIndex: 121
 Forwarding classes: 8 supported, 4 in use
 Ingress queues: 4 supported, 4 in use
 Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : Not Available
 Bytes : 0 0 bps
 Transmitted:
 Packets : 254 0 pps
 Bytes : 16274 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Queue: 1, Forwarding classes: expedited-forwarding
 Queued:
 Packets : Not Available
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Queue: 2, Forwarding classes: assured-forwarding
 Queued:
 Packets : Not Available
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Queue: 3, Forwarding classes: network-control
 Queued:
 Packets : Not Available
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps

```



```

 RED-dropped bytes : 0 0 bps
Forwarding classes: 8 supported, 4 in use
Egress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : Not Available
 Bytes : 0 0 bps
 Transmitted:
 Packets : 3 0 pps
 Bytes : 126 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
 Queued:
 Packets : Not Available
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
 Queued:
 Packets : Not Available
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: network-control
 Queued:
 Packets : Not Available
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Packet Forwarding Engine Chassis Queues:
Queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 80564692 0 pps
 Bytes : 3383717100 0 bps
 Transmitted:
 Packets : 80564692 0 pps
 Bytes : 3383717100 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
 Queued:
 Packets : 80564685 0 pps
 Bytes : 3383716770 0 bps
 Transmitted:
 Packets : 80564685 0 pps

```

```

Bytes : 3383716770 0 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: network-control
Queued:
Packets : 9397 0 pps
Bytes : 3809052 232 bps
Transmitted:
Packets : 9397 0 pps
Bytes : 3809052 232 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps

```

#### show interfaces queue ingress (Gigabit Ethernet IQ2 PIC)

```

user@host> show interfaces queue ge-6/2/0 ingress
Physical interface: ge-6/2/0, Enabled, Physical link is Up
Interface index: 175, SNMP ifIndex: 121
Forwarding classes: 8 supported, 4 in use
Ingress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
Queued:
Packets : Not Available
Bytes : 0 0 bps
Transmitted:
Packets : 288 0 pps
Bytes : 18450 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
Queued:
Packets : Not Available
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
Queued:
Packets : Not Available
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available

```

```

RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: network-control
Queued:
Packets : Not Available
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps

```

### show interfaces queue egress (Gigabit Ethernet IQ2 PIC)

```

user@host> show interfaces queue ge-6/2/0 egress
Physical interface: ge-6/2/0, Enabled, Physical link is Up
Interface index: 175, SNMP ifIndex: 121
Forwarding classes: 8 supported, 4 in use
Egress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
Queued:
Packets : Not Available
Bytes : 0 0 bps
Transmitted:
Packets : 3 0 pps
Bytes : 126 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
Queued:
Packets : Not Available
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
Queued:
Packets : Not Available
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: network-control
Queued:
Packets : Not Available
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
RED-dropped bytes : 0 0 bps

```

```

Packet Forwarding Engine Chassis Queues:
Queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 80564692 0 pps
 Bytes : 3383717100 0 bps
 Transmitted:
 Packets : 80564692 0 pps
 Bytes : 3383717100 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
 Queued:
 Packets : 80564685 0 pps
 Bytes : 3383716770 0 bps
 Transmitted:
 Packets : 80564685 0 pps
 Bytes : 3383716770 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: network-control
 Queued:
 Packets : 9538 0 pps
 Bytes : 3819840 0 bps
 Transmitted:
 Packets : 9538 0 pps
 Bytes : 3819840 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps

```

#### show interfaces queue remaining-traffic (Gigabit Ethernet Enhanced DPC)

```

user@host> show interfaces queue ge-2/2/9 remaining-traffic
Physical interface: ge-2/2/9, Enabled, Physical link is Up
 Interface index: 238, SNMP ifIndex: 71
Forwarding classes: 16 supported, 4 in use
Ingress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 110208969 472875 pps
 Bytes : 5951284434 204282000 bps
 Transmitted:
 Packets : 110208969 472875 pps
 Bytes : 5951284434 204282000 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps

```

```

Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps
High : 0 0 bps
Queue: 3, Forwarding classes: network-control
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
Low : 0 0 pps
Medium-low : 0 0 pps
Medium-high : 0 0 pps
High : 0 0 pps
RED-dropped bytes : 0 0 bps
Low : 0 0 bps
Medium-low : 0 0 bps
Medium-high : 0 0 bps

```

```

 High : 0 0 bps
Forwarding classes: 16 supported, 4 in use
Egress queues: 4 supported, 4 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 109355853 471736 pps
 Bytes : 7436199152 256627968 bps
 Transmitted:
 Packets : 109355852 471736 pps
 Bytes : 7436198640 256627968 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 1, Forwarding classes: expedited-forwarding
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 2, Forwarding classes: assured-forwarding
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 3, Forwarding classes: network-control
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps

```

```

Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps

```

#### show interfaces queue (Channelized OC12 IQE Type 3 PIC in SONET Mode)

```

user@host> show interfaces queue t3-1/1/0:7
Physical interface: t3-1/1/0:7, Enabled, Physical link is Up

 Interface index: 192, SNMP ifIndex: 1948

 Description: full T3 interface connect to 6ce13 t3-3/1/0:7 for FR testing -
 Lam

 Forwarding classes: 16 supported, 9 in use

 Egress queues: 8 supported, 8 in use

 Queue: 0, Forwarding classes: DEFAULT

 Queued:

 Packets : 214886 13449 pps
 Bytes : 9884756 5164536 bps

 Transmitted:

 Packets : 214886 13449 pps
 Bytes : 9884756 5164536 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps

```

Medium-high : 0 0 bps

High : 0 0 bps

Queue: 1, Forwarding classes: REALTIME

Queued:

Packets : 0 0 pps

Bytes : 0 0 bps

Transmitted:

Packets : 0 0 pps

Bytes : 0 0 bps

Tail-dropped packets : 0 0 pps

RED-dropped packets : 0 0 pps

Low : 0 0 pps

Medium-low : 0 0 pps

Medium-high : 0 0 pps

High : 0 0 pps

RED-dropped bytes : 0 0 bps

Low : 0 0 bps

Medium-low : 0 0 bps

Medium-high : 0 0 bps

High : 0 0 bps

Queue: 2, Forwarding classes: PRIVATE

Queued:

Packets : 0 0 pps

Bytes : 0 0 bps

Transmitted:

Packets : 0 0 pps

Bytes : 0 0 bps

Tail-dropped packets : 0 0 pps

RED-dropped packets : 0 0 pps

Low : 0 0 pps



|                   |   |   |       |
|-------------------|---|---|-------|
| Medium-low        | : | 0 | 0 pps |
| Medium-high       | : | 0 | 0 pps |
| High              | : | 0 | 0 pps |
| RED-dropped bytes | : | 0 | 0 bps |
| Low               | : | 0 | 0 bps |
| Medium-low        | : | 0 | 0 bps |
| Medium-high       | : | 0 | 0 bps |
| High              | : | 0 | 0 bps |

Queue: 3, Forwarding classes: CONTROL

Queued:

|         |   |      |       |
|---------|---|------|-------|
| Packets | : | 60   | 0 pps |
| Bytes   | : | 4560 | 0 bps |

Transmitted:

|                      |   |      |       |
|----------------------|---|------|-------|
| Packets              | : | 60   | 0 pps |
| Bytes                | : | 4560 | 0 bps |
| Tail-dropped packets | : | 0    | 0 pps |
| RED-dropped packets  | : | 0    | 0 pps |
| Low                  | : | 0    | 0 pps |
| Medium-low           | : | 0    | 0 pps |
| Medium-high          | : | 0    | 0 pps |
| High                 | : | 0    | 0 pps |
| RED-dropped bytes    | : | 0    | 0 bps |
| Low                  | : | 0    | 0 bps |
| Medium-low           | : | 0    | 0 bps |
| Medium-high          | : | 0    | 0 bps |
| High                 | : | 0    | 0 bps |

Queue: 4, Forwarding classes: CLASS\_B\_OUTPUT

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low                  | : | 0 | 0 pps |
| Medium-low           | : | 0 | 0 pps |
| Medium-high          | : | 0 | 0 pps |
| High                 | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low                  | : | 0 | 0 bps |
| Medium-low           | : | 0 | 0 bps |
| Medium-high          | : | 0 | 0 bps |
| High                 | : | 0 | 0 bps |

Queue: 5, Forwarding classes: CLASS\_C\_OUTPUT

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low                  | : | 0 | 0 pps |
| Medium-low           | : | 0 | 0 pps |
| Medium-high          | : | 0 | 0 pps |
| High                 | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low                  | : | 0 | 0 bps |
| Medium-low           | : | 0 | 0 bps |
| Medium-high          | : | 0 | 0 bps |

```

 High : 0 0 bps
Queue: 6, Forwarding classes: CLASS_V_OUTPUT
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
 RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 7, Forwarding classes: CLASS_S_OUTPUT, GETS
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps

```

|                   |   |   |       |
|-------------------|---|---|-------|
| High              | : | 0 | 0 pps |
| RED-dropped bytes | : | 0 | 0 bps |
| Low               | : | 0 | 0 bps |
| Medium-low        | : | 0 | 0 bps |
| Medium-high       | : | 0 | 0 bps |
| High              | : | 0 | 0 bps |

#### Packet Forwarding Engine Chassis Queues:

Queues: 8 supported, 8 in use

Queue: 0, Forwarding classes: DEFAULT

##### Queued:

|         |   |          |             |
|---------|---|----------|-------------|
| Packets | : | 371365   | 23620 pps   |
| Bytes   | : | 15597330 | 7936368 bps |

##### Transmitted:

|                      |   |          |             |
|----------------------|---|----------|-------------|
| Packets              | : | 371365   | 23620 pps   |
| Bytes                | : | 15597330 | 7936368 bps |
| Tail-dropped packets | : | 0        | 0 pps       |
| RED-dropped packets  | : | 0        | 0 pps       |
| Low                  | : | 0        | 0 pps       |
| Medium-low           | : | 0        | 0 pps       |
| Medium-high          | : | 0        | 0 pps       |
| High                 | : | 0        | 0 pps       |
| RED-dropped bytes    | : | 0        | 0 bps       |
| Low                  | : | 0        | 0 bps       |
| Medium-low           | : | 0        | 0 bps       |
| Medium-high          | : | 0        | 0 bps       |
| High                 | : | 0        | 0 bps       |

Queue: 1, Forwarding classes: REALTIME

##### Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
|---------|---|---|-------|

```

Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps
 Medium-high : 0 0 bps
 High : 0 0 bps
Queue: 2, Forwarding classes: PRIVATE
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : 0 0 pps
RED-dropped packets : 0 0 pps
 Low : 0 0 pps
 Medium-low : 0 0 pps
 Medium-high : 0 0 pps
 High : 0 0 pps
RED-dropped bytes : 0 0 bps
 Low : 0 0 bps
 Medium-low : 0 0 bps

```

Medium-high : 0 0 bps

High : 0 0 bps

Queue: 3, Forwarding classes: CONTROL

Queued:

Packets : 32843 0 pps

Bytes : 2641754 56 bps

Transmitted:

Packets : 32843 0 pps

Bytes : 2641754 56 bps

Tail-dropped packets : 0 0 pps

RED-dropped packets : 0 0 pps

Low : 0 0 pps

Medium-low : 0 0 pps

Medium-high : 0 0 pps

High : 0 0 pps

RED-dropped bytes : 0 0 bps

Low : 0 0 bps

Medium-low : 0 0 bps

Medium-high : 0 0 bps

High : 0 0 bps

Queue: 4, Forwarding classes: CLASS\_B\_OUTPUT

Queued:

Packets : 0 0 pps

Bytes : 0 0 bps

Transmitted:

Packets : 0 0 pps

Bytes : 0 0 bps

Tail-dropped packets : 0 0 pps

RED-dropped packets : 0 0 pps

Low : 0 0 pps

|                   |   |   |       |
|-------------------|---|---|-------|
| Medium-low        | : | 0 | 0 pps |
| Medium-high       | : | 0 | 0 pps |
| High              | : | 0 | 0 pps |
| RED-dropped bytes | : | 0 | 0 bps |
| Low               | : | 0 | 0 bps |
| Medium-low        | : | 0 | 0 bps |
| Medium-high       | : | 0 | 0 bps |
| High              | : | 0 | 0 bps |

Queue: 5, Forwarding classes: CLASS\_C\_OUTPUT

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low                  | : | 0 | 0 pps |
| Medium-low           | : | 0 | 0 pps |
| Medium-high          | : | 0 | 0 pps |
| High                 | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low                  | : | 0 | 0 bps |
| Medium-low           | : | 0 | 0 bps |
| Medium-high          | : | 0 | 0 bps |
| High                 | : | 0 | 0 bps |

Queue: 6, Forwarding classes: CLASS\_V\_OUTPUT

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low                  | : | 0 | 0 pps |
| Medium-low           | : | 0 | 0 pps |
| Medium-high          | : | 0 | 0 pps |
| High                 | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low                  | : | 0 | 0 bps |
| Medium-low           | : | 0 | 0 bps |
| Medium-high          | : | 0 | 0 bps |
| High                 | : | 0 | 0 bps |

Queue: 7, Forwarding classes: CLASS\_S\_OUTPUT, GETS

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low                  | : | 0 | 0 pps |
| Medium-low           | : | 0 | 0 pps |
| Medium-high          | : | 0 | 0 pps |
| High                 | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low                  | : | 0 | 0 bps |
| Medium-low           | : | 0 | 0 bps |
| Medium-high          | : | 0 | 0 bps |



High : 0 0 bps

### show interfaces queue (QFX Series)

```

user@switch> show interfaces queue xe-0/0/15
Physical interface: xe-0/0/15, Enabled, Physical link is Up
Interface index: 49165, SNMP ifIndex: 539
Forwarding classes: 12 supported, 8 in use
Egress queues: 12 supported, 8 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped packets: 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fcoe
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped packets: 0 0 pps
 Total-dropped bytes : 0 0 bps
0 bps
Queue: 4, Forwarding classes: no-loss
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped packets: 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: network-control
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped packets: 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: mcast
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available

```

|                        |   |       |
|------------------------|---|-------|
| Total-dropped packets: | 0 | 0 pps |
| Total-dropped bytes :  | 0 | 0 bps |

### show interfaces queue l2-statistics (lsq interface)

```

user@switch> show interfaces queue lsq-2/2/0.2 l2-statistics
Logical interface lsq-2/2/0.2 (Index 69) (SNMP ifIndex 1598)
Forwarding classes: 16 supported, 4 in use
Egress queues: 8 supported, 4 in use
Burst size: 0
Queue: 0, Forwarding classes: be
 Queued:
 Packets : 1 0 pps
 Bytes : 1001 0 bps
 Transmitted:
 Packets : 5 0 pps
 Bytes : 1062 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: ef
 Queued:
 Packets : 1 0 pps
 Bytes : 1500 0 bps
 Transmitted:
 Packets : 6 0 pps
 Bytes : 1573 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: af
 Queued:
 Packets : 1 0 pps
 Bytes : 512 0 bps
 Transmitted:
 Packets : 3 0 pps
 Bytes : 549 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: nc
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : 0 0 pps
 RED-dropped packets : 0 0 pps
 RED-dropped bytes : 0 0 bps
=====

```

### show interfaces queue lsq (lsq-ifd)

```

user@switch> show interfaces queue lsq-1/0/0
Logical interface lsq-1/0/0 (Index 348) (SNMP ifIndex 660)
Forwarding classes: 16 supported, 4 in use
Egress queues: 8 supported, 4 in use
Burst size: 0

```

## Queue: 0, Forwarding classes: be

## Queued:

|         |   |          |             |
|---------|---|----------|-------------|
| Packets | : | 55576    | 1206 pps    |
| Bytes   | : | 29622008 | 5145472 bps |

## Transmitted:

|                      |   |          |             |
|----------------------|---|----------|-------------|
| Packets              | : | 55576    | 1206 pps    |
| Bytes                | : | 29622008 | 5145472 bps |
| Tail-dropped packets | : | 0        | 0 pps       |
| RL-dropped packets   | : | 0        | 0 pps       |
| RL-dropped bytes     | : | 0        | 0 bps       |
| RED-dropped packets  | : | 0        | 0 pps       |
| Low                  | : | 0        | 0 pps       |
| Medium-low           | : | 0        | 0 pps       |
| Medium-high          | : | 0        | 0 pps       |
| High                 | : | 0        | 0 pps       |
| RED-dropped bytes    | : | 0        | 0 bps       |
| Low                  | : | 0        | 0 bps       |
| Medium-low           | : | 0        | 0 bps       |
| Medium-high          | : | 0        | 0 bps       |
| High                 | : | 0        | 0 bps       |

## Queue: 1, Forwarding classes: ef

## Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

## Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RL-dropped packets   | : | 0 | 0 pps |
| RL-dropped bytes     | : | 0 | 0 bps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low                  | : | 0 | 0 pps |
| Medium-low           | : | 0 | 0 pps |
| Medium-high          | : | 0 | 0 pps |
| High                 | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low                  | : | 0 | 0 bps |
| Medium-low           | : | 0 | 0 bps |
| Medium-high          | : | 0 | 0 bps |
| High                 | : | 0 | 0 bps |

## Queue: 2, Forwarding classes: af

## Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

## Transmitted:

|                      |   |   |       |
|----------------------|---|---|-------|
| Packets              | : | 0 | 0 pps |
| Bytes                | : | 0 | 0 bps |
| Tail-dropped packets | : | 0 | 0 pps |
| RL-dropped packets   | : | 0 | 0 pps |
| RL-dropped bytes     | : | 0 | 0 bps |
| RED-dropped packets  | : | 0 | 0 pps |
| Low                  | : | 0 | 0 pps |
| Medium-low           | : | 0 | 0 pps |
| Medium-high          | : | 0 | 0 pps |
| High                 | : | 0 | 0 pps |
| RED-dropped bytes    | : | 0 | 0 bps |
| Low                  | : | 0 | 0 bps |
| Medium-low           | : | 0 | 0 bps |
| Medium-high          | : | 0 | 0 bps |
| High                 | : | 0 | 0 bps |

## Queue: 3, Forwarding classes: nc

|                      |   |          |             |
|----------------------|---|----------|-------------|
| Queued:              |   |          |             |
| Packets              | : | 22231    | 482 pps     |
| Bytes                | : | 11849123 | 2057600 bps |
| Transmitted:         |   |          |             |
| Packets              | : | 22231    | 482 pps     |
| Bytes                | : | 11849123 | 2057600 bps |
| Tail-dropped packets | : | 0        | 0 pps       |
| RL-dropped packets   | : | 0        | 0 pps       |
| RL-dropped bytes     | : | 0        | 0 bps       |
| RED-dropped packets  | : | 0        | 0 pps       |
| Low                  | : | 0        | 0 pps       |
| Medium-low           | : | 0        | 0 pps       |
| Medium-high          | : | 0        | 0 pps       |
| High                 | : | 0        | 0 pps       |
| RED-dropped bytes    | : | 0        | 0 bps       |
| Low                  | : | 0        | 0 bps       |
| Medium-low           | : | 0        | 0 bps       |
| Medium-high          | : | 0        | 0 bps       |
| High                 | : | 0        | 0 bps       |

## show interfaces xe

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>show interfaces <i>device-name:type-fpc/pic/port</i> &lt;brief   detail   extensive   terse&gt; &lt;descriptions&gt; &lt;media&gt; &lt;routing-instance (all   <i>instance-name</i>)&gt; &lt;snmp-index <i>snmp-index</i>&gt; &lt;statistics&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Release Information</b>      | <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>              | Display status information about the specified 10-Gigabit Ethernet interface. This command does not display statistics for routed VLAN interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>                  | <p><b><i>device-name:type-fpc/pic/port</i></b>—(QFabric systems only) The device name is either the serial number or the alias of the QFabric system component, such as a Node device, Interconnect device, or QFabric infrastructure. The name must contain a maximum of 128 characters and not contain any colons.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b>descriptions</b>—(Optional) Display interface description strings.</p> <p><b>media</b>—(Optional) Display media-specific information about network interfaces.</p> <p><b>routing-instance (all   <i>instance-name</i>)</b>—(Optional) Display the name of an individual routing instance or display all routing instances.</p> <p><b>snmp-index <i>snmp-index</i></b>—(Optional) Display information for the specified SNMP index of the interface.</p> <p><b>statistics</b>—(Optional) Display static interface statistics.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Monitoring Interface Status and Traffic on page 60</a></li> <li>• <a href="#">Troubleshooting Network Interfaces on page 62</a></li> <li>• <a href="#">Troubleshooting an Aggregated Ethernet Interface on page 89</a></li> <li>• <a href="#">Junos OS Network Interfaces Library for Routing Devices</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>List of Sample Output</b>    | <p><a href="#">show interfaces on page 293</a></p> <p><a href="#">show interfaces (Asymmetric Flow Control) on page 294</a></p> <p><a href="#">show interfaces brief on page 294</a></p> <p><a href="#">show interfaces detail on page 294</a></p> <p><a href="#">show interfaces detail (Asymmetric Flow Control) on page 296</a></p> <p><a href="#">show interfaces extensive on page 297</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

[show interfaces extensive \(Asymmetric Flow Control\) on page 299](#)

[show interfaces terse on page 301](#)

[show interfaces \(QFabric System\) on page 301](#)

**Output Fields** Table 29 on page 286 lists the output fields for the **show interfaces xe** command. Output fields are listed in the approximate order in which they appear.

**Table 29: show interfaces xe Output Fields**

| Field Name                                                                              | Field Description                                                                                                                                                                             | Level of Output              |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Physical Interface</b>                                                               |                                                                                                                                                                                               |                              |
| <b>Physical interface</b>                                                               | Name of the physical interface.                                                                                                                                                               | All levels                   |
| <b>Enabled</b>                                                                          | State of the interface.                                                                                                                                                                       | All levels                   |
| <b>Interface index</b>                                                                  | Index number of the physical interface, which reflects its initialization sequence.                                                                                                           | <b>detail extensive none</b> |
| <b>SNMP ifIndex</b>                                                                     | SNMP index number for the physical interface.                                                                                                                                                 | <b>detail extensive none</b> |
| <b>Generation</b>                                                                       | Unique number for use by Juniper Networks technical support only.                                                                                                                             | <b>detail extensive</b>      |
| <b>Link-level type</b>                                                                  | Encapsulation being used on the physical interface.                                                                                                                                           | All levels                   |
| <b>MTU</b>                                                                              | Maximum transmission unit size on the physical interface.                                                                                                                                     | All levels                   |
| <b>Speed</b>                                                                            | Speed at which the interface is running.                                                                                                                                                      | All levels                   |
| <b>Duplex</b>                                                                           | Duplex mode of the interface, either <b>Full-Duplex</b> or <b>Half-Duplex</b> .                                                                                                               | All levels                   |
| <b>Loopback</b>                                                                         | Loopback status: <b>Enabled</b> or <b>Disabled</b> . If loopback is enabled, type of loopback: <b>Local</b> or <b>Remote</b> .                                                                | All levels                   |
| <b>Source filtering</b>                                                                 | Source filtering status: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                  | All levels                   |
| <b>LAN-PHY mode</b>                                                                     | 10-Gigabit Ethernet interface operating in Local Area Network Physical Layer Device (LAN PHY) mode. LAN PHY allows 10-Gigabit Ethernet wide area links to use existing Ethernet applications. | All levels                   |
| <b>Unidirectional</b>                                                                   | Unidirectional link mode status for 10-Gigabit Ethernet interface: <b>Enabled</b> or <b>Disabled</b> for parent interface; <b>Rx-only</b> or <b>Tx-only</b> for child interfaces.             | All levels                   |
| <b>Flow control</b>                                                                     | Flow control status: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                      | All levels                   |
| <b>NOTE:</b> This field is only displayed if asymmetric flow control is not configured. |                                                                                                                                                                                               |                              |

Table 29: show interfaces xe Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output              |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Configured-flow-control</b> | <p>Configured flow control for the interface transmit buffers (<b>tx-buffers</b>) and receive buffers (<b>rx-buffers</b>):</p> <ul style="list-style-type: none"> <li><b>tx-buffers</b>—<b>On</b> if the interface is configured to respond to Ethernet PAUSE messages received from the connected peer.<br/><b>Off</b> if the interface is not configured to respond to received PAUSE messages.</li> <li><b>rx-buffers</b>—<b>On</b> if the interface is configured to generate and send Ethernet PAUSE messages to the connected peer.<br/><b>Off</b> if the interface is not configured to generate and send PAUSE messages.</li> </ul> <p><b>NOTE:</b> This field is only displayed if asymmetric flow control is configured.</p> | All levels                   |
| <b>Auto-negotiation</b>        | Autonegotiation status: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | All levels                   |
| <b>Remote-fault</b>            | <p>Remote fault status:</p> <ul style="list-style-type: none"> <li><b>Online</b>—Autonegotiation is manually configured as online.</li> <li><b>Offline</b>—Autonegotiation is manually configured as offline.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | All levels                   |
| <b>Device flags</b>            | Information about the physical device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All levels                   |
| <b>Interface flags</b>         | Information about the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | All levels                   |
| <b>Link flags</b>              | Information about the link.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | All levels                   |
| <b>Wavelength</b>              | Configured wavelength, in nanometers (nm).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | All levels                   |
| <b>Frequency</b>               | Frequency associated with the configured wavelength, in terahertz (THz).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | All levels                   |
| <b>CoS queues</b>              | Number of CoS queues configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>detail extensive none</b> |
| <b>Schedulers</b>              | Number of CoS schedulers configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>extensive</b>             |
| <b>Hold-times</b>              | Current interface hold-time up and hold-time down, in milliseconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive</b>      |
| <b>Current address</b>         | Configured MAC address.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive none</b> |
| <b>Hardware address</b>        | Hardware MAC address.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive none</b> |
| <b>Last flapped</b>            | Date, time, and how long ago the interface went from down to up. The format is <b>Last flapped: year-month-day hour:minute:second:timezone (hour:minute:second ago)</b> . For example, <b>Last flapped: 2008-01-16 10:52:40 UTC (3d 22:58 ago)</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive none</b> |
| <b>Input Rate</b>              | Input rate in bits per second (bps) and packets per second (pps).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | None specified               |
| <b>Output Rate</b>             | Output rate in bps and pps.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | None specified               |
| <b>Statistics last cleared</b> | Time when the statistics for the interface were last set to zero.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>detail extensive</b>      |

Table 29: show interfaces xe Output Fields (*continued*)

| Field Name                | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Level of Output         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Traffic statistics</b> | <p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive</b> |
| <b>Input errors</b>       | <p>Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• <b>Errors</b>—Sum of the incoming frame aborts and FCS errors.</li> <li>• <b>Drops</b>—Number of packets dropped by the input queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• <b>Framing errors</b>—Number of packets received with an invalid frame checksum (FCS).</li> <li>• <b>Runts</b>—Number of frames received that are smaller than the runt threshold.</li> <li>• <b>Policed discards</b>—Number of frames that the incoming packet match code discarded because they were not recognized or not of interest. Usually, this field reports protocols that Junos OS does not handle.</li> <li>• <b>L3 incompletes</b>—Number of incoming packets discarded because they failed Layer 3 sanity checks of the header. For example, a frame with less than 20 bytes of available IP header is discarded. L3 incomplete errors can be ignored if you configure the <b>ignore-l3-incompletes</b> statement.</li> <li>• <b>L2 channel errors</b>—Number of times the software did not find a valid logical interface for an incoming frame.</li> <li>• <b>L2 mismatch timeouts</b>—Number of malformed or short packets that caused the incoming packet handler to discard the frame as unreadable.</li> <li>• <b>FIFO errors</b>—Number of FIFO errors in the receive direction that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>Resource errors</b>—Sum of transmit drops.</li> </ul> | <b>extensive</b>        |



Table 29: show interfaces xe Output Fields (*continued*)

| Field Name                      | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Level of Output         |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Output errors</b>            | <p>Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• <b>Carrier transitions</b>—Number of times the interface has gone from <b>down</b> to <b>up</b>. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the PIC or PIM is malfunctioning.</li> <li>• <b>Errors</b>—Sum of the outgoing frame aborts and FCS errors.</li> <li>• <b>Drops</b>—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• <b>Collisions</b>—Number of Ethernet collisions. The Gigabit Ethernet PIC supports only full-duplex operation, so for Gigabit Ethernet PICs, this number should always remain 0. If it is nonzero, there is a software bug.</li> <li>• <b>Aged packets</b>—Number of packets that remained in shared packet SDRAM so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly malfunctioning hardware.</li> <li>• <b>FIFO errors</b>—Number of FIFO errors in the send direction as reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>HS link CRC errors</b>—Number of errors on the high-speed links between the ASICs responsible for handling the router interfaces.</li> <li>• <b>MTU errors</b>—Number of packets whose size exceeded the MTU of the interface.</li> <li>• <b>Resource errors</b>—Sum of transmit drops.</li> </ul> | <b>extensive</b>        |
| <b>Egress queues</b>            | Total number of egress queues supported on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail extensive</b> |
| <b>Queue counters (Egress)</b>  | <p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> <li>• <b>Queued packets</b>—Number of queued packets.</li> <li>• <b>Transmitted packets</b>—Number of transmitted packets.</li> <li>• <b>Dropped packets</b>—Number of packets dropped by the ASIC's RED mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail extensive</b> |
| <b>Queue Number</b>             | The CoS queue number and the forwarding classes mapped to the queue number. The <b>Mapped forwarding class</b> column lists the forwarding classes mapped to each CoS queue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive</b> |
| <b>Ingress queues</b>           | Total number of ingress queues supported on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>extensive</b>        |
| <b>Queue counters (Ingress)</b> | <p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> <li>• <b>Queued packets</b>—Number of queued packets.</li> <li>• <b>Transmitted packets</b>—Number of transmitted packets.</li> <li>• <b>Dropped packets</b>—Number of packets dropped by the ASIC's RED mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>extensive</b>        |

Table 29: show interfaces xe Output Fields (*continued*)

| Field Name                              | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Level of Output              |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Active alarms and Active defects</b> | <p>Ethernet-specific defects that can prevent the interface from passing packets. When a defect persists for a certain amount of time, it is promoted to an alarm. Based on the switch configuration, an alarm can ring the red or yellow alarm bell on the switch, or turn on the red or yellow alarm LED on the craft interface. These fields can contain the value <b>None</b> or <b>Link</b>.</p> <ul style="list-style-type: none"> <li>• <b>None</b>—There are no active defects or alarms.</li> <li>• <b>Link</b>—Interface has lost its link state, which usually means that the cable is unplugged, the far-end system has been turned off, or the PIC is malfunctioning.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive none</b> |
| <b>PCS statistics</b>                   | Physical Coding Sublayer (PCS) fault conditions from the LAN PHY device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive</b>      |
| <b>MAC statistics</b>                   | <p>Receive and Transmit statistics reported by the PIC's MAC subsystem.</p> <ul style="list-style-type: none"> <li>• <b>Total octets and total packets</b>—Total number of octets and packets. For Gigabit Ethernet IQ PICs, the received octets count varies by interface type.</li> <li>• <b>Unicast packets, Broadcast packets, and Multicast packets</b>—Number of unicast, broadcast, and multicast packets.</li> <li>• <b>CRC/Align errors</b>—Total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, and had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error).</li> <li>• <b>FIFO error</b>—Number of FIFO errors that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>MAC control frames</b>—Number of MAC control frames.</li> <li>• <b>MAC pause frames</b>—Number of MAC control frames with <b>pause</b> operational code.</li> <li>• <b>Oversized frames</b>—Number of packets that exceeds the configured MTU.</li> <li>• <b>Jabber frames</b>—Number of frames that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. This definition of jabber is different from the definition in IEEE-802.3 section 8.2.1.5 (10BASE5) and section 10.3.1.4 (10BASE2). These documents define jabber as the condition in which any packet exceeds 20 ms. The allowed range to detect jabber is from 20 ms to 150 ms.</li> <li>• <b>Fragment frames</b>—Total number of packets that were less than 64 octets in length (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. Fragment frames normally increment because both runs (which are normal occurrences caused by collisions) and noise hits are counted.</li> <li>• <b>VLAN tagged frames</b>—Number of frames that are VLAN tagged. The system uses the TPID of 0x8100 in the frame to determine whether a frame is tagged or not. This counter is not supported on EX Series switches and is always displayed as 0.</li> <li>• <b>Code violations</b>—Number of times an event caused the PHY to indicate "Data reception error" or "invalid data symbol error."</li> </ul> | <b>extensive</b>             |
| <b>Filter statistics</b>                | Receive and Transmit statistics reported by the PIC's MAC address filter subsystem.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>extensive</b>             |

Table 29: show interfaces xe Output Fields (*continued*)

| Field Name                  | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Level of Output |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Autonegotiation information | <p>Information about link autonegotiation.</p> <ul style="list-style-type: none"> <li>• <b>Negotiation status:</b> <ul style="list-style-type: none"> <li>• <b>Incomplete</b>—Ethernet interface has the speed or link mode configured.</li> <li>• <b>No autonegotiation</b>—Remote Ethernet interface has the speed or link mode configured, or does not perform autonegotiation.</li> <li>• <b>Complete</b>—Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful.</li> </ul> </li> <li>• <b>Link partner status</b>—OK when the Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful.</li> <li>• <b>Link partner:</b> <ul style="list-style-type: none"> <li>• <b>Link mode</b>—Depending on the capability of the attached Ethernet device, either <b>Full-duplex</b> or <b>Half-duplex</b>.</li> <li>• <b>Flow control</b>—Types of flow control supported by the remote Ethernet device. For Fast Ethernet interfaces, the type is <b>None</b>. For Gigabit Ethernet interfaces, types are <b>Symmetric</b> (link partner supports <b>PAUSE</b> on receive and transmit), <b>Asymmetric</b> (link partner supports <b>PAUSE</b> on transmit), and <b>Symmetric/Asymmetric</b> (link partner supports both <b>PAUSE</b> on receive and transmit or only <b>PAUSE</b> receive).</li> <li>• <b>Remote fault</b>—Remote fault information from the link partner—<b>Failure</b> indicates a receive link error. <b>OK</b> indicates that the link partner is receiving. <b>Negotiation error</b> indicates a negotiation error. <b>Offline</b> indicates that the link partner is going offline.</li> </ul> </li> <li>• <b>Local resolution:</b> <ul style="list-style-type: none"> <li>• <b>Flow control</b>—Types of flow control supported by the remote Ethernet device. For Gigabit Ethernet interfaces, types are <b>Symmetric</b> (link partner supports <b>PAUSE</b> on receive and transmit), <b>Asymmetric</b> (link partner supports <b>PAUSE</b> on transmit), and <b>Symmetric/Asymmetric</b> (link partner supports both <b>PAUSE</b> on receive and transmit or only <b>PAUSE</b> receive). For asymmetric <b>PAUSE</b>, shows if the <b>PAUSE</b> transmit and <b>PAUSE</b> receive states on the interface are <b>enable</b> or <b>disable</b>.</li> <li>• <b>Remote fault</b>—Remote fault information. <b>Link OK</b> (no error detected on receive), <b>Offline</b> (local interface is offline), and <b>Link Failure</b> (link error detected on receive).</li> </ul> </li> </ul> | extensive       |

Table 29: show interfaces xe Output Fields (*continued*)

| Field Name                                    | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Level of Output              |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Packet Forwarding Engine configuration</b> | Information about the configuration of the Packet Forwarding Engine: <ul style="list-style-type: none"> <li><b>Destination slot</b>—FPC slot number.</li> <li><b>CoS transmit queue</b>—Queue number and its associated user-configured forwarding class name.</li> <li><b>Bandwidth %</b>—Percentage of bandwidth allocated to the queue.</li> <li><b>Bandwidth bps</b>—Bandwidth allocated to the queue (in bps).</li> <li><b>Buffer %</b>—Percentage of buffer space allocated to the queue.</li> <li><b>Buffer usec</b>—Amount of buffer space allocated to the queue, in microseconds. This value is nonzero only if the buffer size is configured in terms of time.</li> <li><b>Priority</b>—Queue priority: <b>low</b> or <b>high</b>.</li> <li><b>Limit</b>—Displayed if rate limiting is configured for the queue. Possible values are <b>none</b> and <b>exact</b>. If <b>exact</b> is configured, the queue transmits only up to the configured bandwidth, even if excess bandwidth is available. If <b>none</b> is configured, the queue transmits beyond the configured bandwidth if bandwidth is available.</li> </ul> | <b>extensive</b>             |
| <b>Logical Interface</b>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |
| <b>Logical interface</b>                      | Name of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | All levels                   |
| <b>Index</b>                                  | Index number of the logical interface, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive none</b> |
| <b>SNMP ifIndex</b>                           | SNMP interface index number for the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive none</b> |
| <b>Generation</b>                             | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive</b>      |
| <b>Flags</b>                                  | Information about the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | All levels                   |
| <b>Encapsulation</b>                          | Encapsulation on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | All levels                   |
| <b>Protocol</b>                               | Protocol family.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive none</b> |
| <b>Traffic statistics</b>                     | Number and rate of bytes and packets received (input) and transmitted (output) on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>detail extensive</b>      |
| <b>IPv6 transit statistics</b>                | If IPv6 statics tracking is enabled, number of IPv6 bytes and packets received and transmitted on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>extensive</b>             |
| <b>Local statistics</b>                       | Number and rate of bytes and packets destined to and from the switch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>extensive</b>             |
| <b>Transit statistics</b>                     | Number and rate of bytes and packets transiting the switch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>extensive</b>             |
| <b>Generation</b>                             | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive</b>      |
| <b>Route Table</b>                            | Route table in which the logical interface address is located. For example, <b>0</b> refers to the routing table inet.0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>detail extensive none</b> |

Table 29: show interfaces xe Output Fields (*continued*)

| Field Name              | Field Description                                                                                                                                                                                                                                                                                                                                                                                  | Level of Output              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Input Filters</b>    | Names of any input filters applied to this interface.                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive</b>      |
| <b>Output Filters</b>   | Names of any output filters applied to this interface.                                                                                                                                                                                                                                                                                                                                             | <b>detail extensive</b>      |
| <b>Flags</b>            | Information about protocol family flags.<br><br>If unicast Reverse Path Forwarding (uRPF) is explicitly configured on the specified interface, the uRPF flag appears. If uRPF was configured on a different interface (and therefore is enabled on all switch interfaces) but was not explicitly configured on the specified interface, the uRPF flag does not appear even though uRPF is enabled. | <b>detail extensive</b>      |
| <b>Addresses, Flags</b> | Information about the address flags.                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive none</b> |
| <i>protocol-family</i>  | Protocol family configured on the logical interface. If the protocol is <b>inet</b> , the IP address of the interface is also displayed.                                                                                                                                                                                                                                                           | <b>brief</b>                 |
| <b>Flags</b>            | Information about the address flag.                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive none</b> |
| <b>Destination</b>      | IP address of the remote side of the connection.                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive none</b> |
| <b>Local</b>            | IP address of the logical interface.                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive none</b> |
| <b>Broadcast</b>        | Broadcast address of the logical interface.                                                                                                                                                                                                                                                                                                                                                        | <b>detail extensive none</b> |
| <b>Generation</b>       | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive</b>      |

## Sample Output

### show interfaces

```

user@switch> show interfaces xe-0/0/1
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Interface index: 49195, SNMP ifIndex: 591
 Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled,
 Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 12 supported, 12 maximum usable queues
 Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
 Last flapped : 2011-06-01 00:42:03 PDT (00:02:42 ago)
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)
 Active alarms : None
 Active defects : None

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523)
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2
 Input packets : 0

```

```
Output packets: 0
Protocol eth-switch, MTU: 0
Flags: Trunk-Mode
```

### show interfaces (Asymmetric Flow Control)

```
user@switch> show interfaces xe-0/0/1
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Interface index: 49195, SNMP ifIndex: 591
 Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled,
 Configured-flow-control tx-buffers: off rx-buffers: on
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 12 supported, 12 maximum usable queues
 Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
 Last flapped : 2011-06-01 00:42:03 PDT (00:02:42 ago)
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)
 Active alarms : None
 Active defects : None

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523)
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2
 Input packets : 0
 Output packets: 0
 Protocol eth-switch, MTU: 0
 Flags: Trunk-Mode
```

### show interfaces brief

```
user@switch> show interfaces xe-0/0/1 brief
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps, Loopback: Disabled,
 Source filtering: Disabled, Flow control: Enabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None

Logical interface xe-0/0/1.0
 Flags: SNMP-Traps Encapsulation: ENET2
 eth-switch
```

### show interfaces detail

```
user@switch> show interfaces xe-0/0/1 detail
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Interface index: 49195, SNMP ifIndex: 591, Generation: 169
 Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled,
 Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 12 supported, 12 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
```

```

Last flapped : 2011-06-01 00:42:03 PDT (00:02:50 ago)
Statistics last cleared: 2011-06-01 00:44:39 PDT (00:00:14 ago)
Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Egress queues: 12 supported, 9 in use
Queue counters: Queued packets Transmitted packets Dropped packets

 0 best-effort 0 0 0
 1 fc7 0 0 0
 2 no-loss 0 0 0
 3 fcoe 0 0 0
 4 fc4 0 0 0
 5 fc5 0 0 0
 6 fc6 0 0 0
 7 network-cont 0 0 0
 8 mcast 0 0 0

Queue number: Mapped forwarding classes
 0 best-effort
 1 fc7
 2 no-loss
 3 fcoe
 4 fc4
 5 fc5
 6 fc6
 7 network-control
 8 mcast
Active alarms : None
Active defects : None

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523) (Generation 143)
Flags: SNMP-Traps 0x0 Encapsulation: ENET2
Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Local statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps

```

```

Input packets: 0 0 pps
Output packets: 0 0 pps
Protocol eth-switch, MTU: 0, Generation: 170, Route table: 0
Flags: Trunk-Mode

```

### show interfaces detail (Asymmetric Flow Control)

```

user@switch> show interfaces xe-0/0/1 detail
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Interface index: 49195, SNMP ifIndex: 591, Generation: 169
 Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled,
 Configured-flow-control tx-buffers: off rx-buffers: on
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 12 supported, 12 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
 Last flapped : 2011-06-01 00:42:03 PDT (00:02:50 ago)
 Statistics last cleared: 2011-06-01 00:44:39 PDT (00:00:14 ago)
 Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes: 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
 IPv6 transit statistics:
 Input bytes : 0
 Output bytes: 0
 Input packets: 0
 Output packets: 0
 Egress queues: 12 supported, 9 in use
 Queue counters:
 Queued packets Transmitted packets Dropped packets

 0 best-effort 0 0 0
 1 fc7 0 0 0
 2 no-loss 0 0 0
 3 fcoe 0 0 0
 4 fc4 0 0 0
 5 fc5 0 0 0
 6 fc6 0 0 0
 7 network-cont 0 0 0
 8 mcast 0 0 0

 Queue number: Mapped forwarding classes
 0 best-effort
 1 fc7
 2 no-loss
 3 fcoe
 4 fc4
 5 fc5
 6 fc6

```



```

7 network-control
8 mcast
Active alarms : None
Active defects : None

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523) (Generation 143)
Flags: SNMP-Traps 0x0 Encapsulation: ENET2
Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Local statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
Protocol eth-switch, MTU: 0, Generation: 170, Route table: 0
Flags: Trunk-Mode

```

#### show interfaces extensive

```

user@switch> show interfaces xe-0/0/1 extensive
Physical interface: xe-0/0/1, Enabled, Physical link is Up
Interface index: 49195, SNMP ifIndex: 591, Generation: 169
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
Disabled,
Flow control: Disabled
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x0
Link flags : None
CoS queues : 12 supported, 12 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
Last flapped : 2011-06-01 00:42:03 PDT (00:03:08 ago)
Statistics last cleared: 2011-06-01 00:44:39 PDT (00:00:32 ago)
Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Input errors:
 Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
Resource errors: 0
Output errors:
 Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 12 supported, 9 in use
Queue counters: Queued packets Transmitted packets Dropped packets

```

|                |   |   |   |
|----------------|---|---|---|
| 0 best-effort  | 0 | 0 | 0 |
| 1 fc7          | 0 | 0 | 0 |
| 2 no-loss      | 0 | 0 | 0 |
| 3 fcoe         | 0 | 0 | 0 |
| 4 fc4          | 0 | 0 | 0 |
| 5 fc5          | 0 | 0 | 0 |
| 6 fc6          | 0 | 0 | 0 |
| 7 network-cont | 0 | 0 | 0 |
| 8 mcast        | 0 | 0 | 0 |

Queue number:            Mapped forwarding classes

|   |                 |
|---|-----------------|
| 0 | best-effort     |
| 1 | fc7             |
| 2 | no-loss         |
| 3 | fcoe            |
| 4 | fc4             |
| 5 | fc5             |
| 6 | fc6             |
| 7 | network-control |
| 8 | mcast           |

Active alarms : None

Active defects : None

MAC statistics:

|                    | Receive | Transmit |
|--------------------|---------|----------|
| Total octets       | 0       | 0        |
| Total packets      | 0       | 0        |
| Unicast packets    | 0       | 0        |
| Broadcast packets  | 0       | 0        |
| Multicast packets  | 0       | 0        |
| CRC/Align errors   | 0       | 0        |
| FIFO errors        | 0       | 0        |
| MAC control frames | 0       | 0        |
| MAC pause frames   | 0       | 0        |
| Oversized frames   | 0       | 0        |
| Jabber frames      | 0       | 0        |
| Fragment frames    | 0       | 0        |
| VLAN tagged frames | 0       | 0        |
| Code violations    | 0       | 0        |

MAC Priority Flow Control Statistics:

|              |   |   |
|--------------|---|---|
| Priority : 0 | 0 | 0 |
| Priority : 1 | 0 | 0 |
| Priority : 2 | 0 | 0 |
| Priority : 3 | 0 | 0 |
| Priority : 4 | 0 | 0 |
| Priority : 5 | 0 | 0 |
| Priority : 6 | 0 | 0 |
| Priority : 7 | 0 | 0 |

Filter statistics:

|                      |   |
|----------------------|---|
| Input packet count   | 0 |
| Input packet rejects | 0 |
| Input DA rejects     | 0 |
| Input SA rejects     | 0 |
| Output packet count  | 0 |

```

Output packet pad count 0
Output packet error count 0
CAM destination filters: 1, CAM source filters: 0
Packet Forwarding Engine configuration:
 Destination slot: 0
CoS information:
 Direction : Output
 CoS transmit queue Bandwidth Buffer Priority
Limit
 % bps % usec
0 best-effort 75 7500000000 75 0 low
none
7 network-control 5 500000000 5 0 low
none
8 mcast 20 2000000000 20 0 low
none

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523) (Generation 143)
Flags: SNMP-Traps 0x0 Encapsulation: ENET2
Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Local statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
Protocol eth-switch, MTU: 0, Generation: 170, Route table: 0
Flags: Trunk-Mode

```

### show interfaces extensive (Asymmetric Flow Control)

```

user@switch> show interfaces xe-0/0/1 extensive
Physical interface: xe-0/0/1, Enabled, Physical link is Up
Interface index: 49195, SNMP ifIndex: 591, Generation: 169
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
Disabled,
Configured-flow-control tx-buffers: off rx-buffers: on
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x0
Link flags : None
CoS queues : 12 supported, 12 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
Last flapped : 2011-06-01 00:42:03 PDT (00:03:08 ago)
Statistics last cleared: 2011-06-01 00:44:39 PDT (00:00:32 ago)
Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0

```

```

Output bytes : 0
Input packets: 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runt: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 12 supported, 9 in use
Queue counters: Queued packets Transmitted packets Dropped packets

0 best-effort 0 0 0
1 fc7 0 0 0
2 no-loss 0 0 0
3 fcoe 0 0 0
4 fc4 0 0 0
5 fc5 0 0 0
6 fc6 0 0 0
7 network-cont 0 0 0
8 mcast 0 0 0

Queue number: Mapped forwarding classes
0 best-effort
1 fc7
2 no-loss
3 fcoe
4 fc4
5 fc5
6 fc6
7 network-control
8 mcast

Active alarms : None
Active defects : None
MAC statistics:
Total octets Receive Transmit
Total packets 0 0
Unicast packets 0 0
Broadcast packets 0 0
Multicast packets 0 0
CRC/Align errors 0 0
FIFO errors 0 0
MAC control frames 0 0
MAC pause frames 0 0
Oversized frames 0
Jabber frames 0
Fragment frames 0
VLAN tagged frames 0
Code violations 0
MAC Priority Flow Control Statistics:
Priority : 0 0 0
Priority : 1 0 0

```

```

Priority : 2 0 0
Priority : 3 0 0
Priority : 4 0 0
Priority : 5 0 0
Priority : 6 0 0
Priority : 7 0 0
Filter statistics:
Input packet count 0
Input packet rejects 0
Input DA rejects 0
Input SA rejects 0
Output packet count 0
Output packet pad count 0
Output packet error count 0
CAM destination filters: 1, CAM source filters: 0
Packet Forwarding Engine configuration:
Destination slot: 0
CoS information:
Direction : Output
CoS transmit queue Bandwidth Buffer Priority Limit
 % bps % usec
0 best-effort 75 7500000000 75 0 low none
7 network-control 5 500000000 5 0 low none
8 mcast 20 2000000000 20 0 low none

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523) (Generation 143)
Flags: SNMP-Traps 0x0 Encapsulation: ENET2
Traffic statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Local statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Transit statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps
Protocol eth-switch, MTU: 0, Generation: 170, Route table: 0
Flags: Trunk-Mode

```

### show interfaces terse

```

user@switch> show interfaces xe-0/0/1 terse
Interface Admin Link Proto Local Remote

xe-0/0/1 up up
xe-0/0/1.0 up up eth-switch

```

### show interfaces (QFabric System)

```

user@switch> show interfaces node1:xe-0/0/0
Physical interface: node1:xe-0/0/0, Enabled, Physical link is Down
Interface index: 129, SNMP ifIndex: 2884086
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
Error: None, MAC-REWRITE Error: None,
Loopback: Disabled, Source filtering: Disabled, Flow control: Enabled

```

Interface flags: Internal: 0x4000  
CoS queues : 8 supported, 8 maximum usable queues  
Current address: 02:00:09:03:00:00, Hardware address: 02:00:09:03:00:00  
Last flapped : Never  
Input rate : 0 bps (0 pps)  
Output rate : 0 bps (0 pps)

## show interfaces fabric

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>show interfaces fabric &lt;interface-name&gt; &lt;brief   detail   extensive   terse&gt; &lt;descriptions&gt; &lt;media&gt; &lt;routing-instance (all   instance-name)&gt; &lt;snmp-index snmp-index&gt; &lt;statistics&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Release Information</b>      | Command introduced in Junos OS Release 12.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Display status information about the specified fabric interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>                  | <p><b>interface-name</b>—(QFabric systems only) Either the serial number or the alias of the QFabric switch component, such as a Node device, Interconnect device, or QFabric infrastructure. The name can contain a maximum of 128 characters and not contain any colons.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b>descriptions</b>—(Optional) Display interface description strings.</p> <p><b>media</b>—(Optional) Display media-specific information about network interfaces.</p> <p><b>routing-instance (all   instance-name)</b>—(Optional) Display all routing instances or the name of an individual routing instance.</p> <p><b>snmp-index snmp-index</b>—(Optional) Display information for the specified SNMP index of the interface.</p> <p><b>statistics</b>—(Optional) Display static interface statistics.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Monitoring Interface Status and Traffic on page 60</a></li> <li>• <a href="#">Troubleshooting Network Interfaces on page 62</a></li> <li>• <a href="#">Troubleshooting an Aggregated Ethernet Interface on page 89</a></li> <li>• <a href="#">Junos OS Network Interfaces Library for Routing Devices</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>List of Sample Output</b>    | <p><a href="#">show interfaces fabric on page 310</a></p> <p><a href="#">show interfaces fabric brief on page 310</a></p> <p><a href="#">show interfaces fabric detail on page 319</a></p> <p><a href="#">show interfaces fabric extensive on page 320</a></p> <p><a href="#">show interfaces fabric terse on page 322</a></p> <p><a href="#">show interfaces fabric device-name on page 322</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

**Output Fields** Table 29 on page 286 lists the output fields for the **show interfaces fabric** command. Output fields are listed in the approximate order in which they appear.

**Table 30: show interfaces fabric Output Fields**

| Field Name                | Field Description                                                                                                    | Level of Output       |
|---------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Physical Interface</b> |                                                                                                                      |                       |
| Physical interface        | Name of the physical interface.                                                                                      | All levels            |
| Enabled                   | State of the interface.                                                                                              | All levels            |
| Type                      | Physical interface type; for example, Ethernet.                                                                      | All levels            |
| Interface index           | Index number of the physical interface, which reflects its initialization sequence.                                  | detail extensive none |
| SNMP ifIndex              | SNMP index number for the physical interface.                                                                        | detail extensive none |
| Link-level type           | Encapsulation being used on the physical interface.                                                                  | All levels            |
| MTU                       | Maximum transmission unit size on the physical interface.                                                            | All levels            |
| Clocking                  | Reference clock source.                                                                                              | detail                |
| Speed                     | Speed at which the interface is running.                                                                             | All levels            |
| Duplex                    | Duplex mode of the interface, either Full-Duplex or Half-Duplex.                                                     | All levels            |
| MAC-REWRITE Error         | Specifies if the encapsulation of the packet has been changed.                                                       | none                  |
| BPDU Error                | Specifies if a BPDU has been received on a blocked interface.                                                        | none                  |
| Loopback                  | Loopback status: Enabled or Disabled. If loopback is enabled, type of loopback: Local or Remote.                     | All levels            |
| Source filtering          | Source filtering status: Enabled or Disabled.                                                                        | All levels            |
| Flow control              | Flow control status: Enabled or Disabled. This field is only displayed if asymmetric flow control is not configured. | All levels            |
| Device flags              | Information about the physical device.                                                                               | All levels            |
| Interface flags           | Information about the interface.                                                                                     | All levels            |
| CoS queues                | Number of CoS queues configured.                                                                                     | detail extensive none |
| Hold-Times                | Current interface hold-time up and hold-time down, in milliseconds.                                                  | detail                |
| Current address           | Configured MAC address.                                                                                              | detail extensive none |



Table 30: show interfaces fabric Output Fields (*continued*)

| Field Name              | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Level of Output       |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Hardware address        | Hardware MAC address.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | detail extensive none |
| Last flapped            | Date, time, and how long ago the interface went from down to up. The format is <b>Last flapped: <i>year-month-day hour:minute:second:timezone (hour:minute:second ago)</i></b> . For example, <b>Last flapped: 2008-01-16 10:52:40 UTC (3d 22:58 ago)</b> .                                                                                                                                                                                                                                                                       | detail extensive none |
| Statistics last cleared | Date, time, and how long ago the statistics for the interface were cleared. The format is <b>Statistics last cleared: <i>year-month-day hour:minute:second:timezone (hour:minute:second ago)</i></b> . For example, <b>2010-05-17 07:51:28 PDT (00:04:33 ago)</b> .                                                                                                                                                                                                                                                               | detail extensive      |
| Traffic statistics      | <p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> <li>• Input bytes—Number of bytes received on the interface.</li> <li>• Output bytes—Number of bytes transmitted on the interface.</li> <li>• Input packets—Number of packets received on the interface.</li> <li>• Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                    | detail extensive      |
| IPv6 transit statistics | <p>If IPv6 statistics tracking is enabled, number of IPv6 bytes and packets received and transmitted on the logical interface:</p> <ul style="list-style-type: none"> <li>• Input bytes—Number of bytes received on the interface.</li> <li>• Output bytes—Number of bytes transmitted on the interface.</li> <li>• Input packets—Number of packets received on the interface.</li> <li>• Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p> | detail extensive      |

Table 30: show interfaces fabric Output Fields (*continued*)

| Field Name   | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Level of Output |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Input errors | <p>Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• Errors—Sum of the incoming frame aborts and FCS errors.</li> <li>• Drops—Number of packets dropped by the input queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• Framing errors—Number of packets received with an invalid frame checksum (FCS).</li> <li>• Runts—Number of frames received that are smaller than the runt threshold.</li> <li>• Policed discards—Number of frames that the incoming packet match code discarded because they were not recognized or not of interest. Usually, this field reports protocols that Junos OS does not handle.</li> <li>• L3 incompletes—Number of incoming packets discarded because they failed Layer 3 sanity checks of the header. For example, a frame with less than 20 bytes of available IP header is discarded. L3 incomplete errors can be ignored if you configure the <code>ignore-l3-incompletes</code> statement.</li> <li>• L2 channel errors—Number of times the software did not find a valid logical interface for an incoming frame.</li> <li>• L2 mismatch timeouts—Number of malformed or short packets that caused the incoming packet handler to discard the frame as unreadable.</li> <li>• FIFO errors—Number of FIFO errors in the receive direction that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• Resource errors—Sum of transmit drops.</li> </ul> | extensive       |

Table 30: show interfaces fabric Output Fields (*continued*)

| Field Name                       | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Level of Output       |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Output errors                    | <p>Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>Carrier transitions—Number of times the interface has gone from down to up. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the PIC or PIM is malfunctioning.</li> <li>Errors—Sum of the outgoing frame aborts and FCS errors.</li> <li>Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>Collisions—Number of Ethernet collisions. The Gigabit Ethernet PIC supports only full-duplex operation, so for Gigabit Ethernet PICs, this number should always remain 0. If it is nonzero, there is a software bug.</li> <li>Aged packets—Number of packets that remained in shared packet SDRAM so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly malfunctioning hardware.</li> <li>FIFO errors—Number of FIFO errors in the send direction as reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>HS link CRC errors—Number of errors on the high-speed links between the ASICs responsible for handling the fabric interfaces.</li> <li>MTU errors—Number of packets whose size exceeded the MTU of the interface.</li> <li>Resource errors—Sum of transmit drops.</li> </ul> | extensive             |
| Egress queues                    | Total number of egress queues supported on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | detail extensive      |
| Queue counters                   | <p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> <li>Queued packets—Number of queued packets.</li> <li>Transmitted packets—Number of transmitted packets.</li> <li>Dropped packets—Number of packets dropped by the ASIC's RED mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | detail extensive      |
| Input rate                       | Input rate in bits per second (bps) and packets per second (pps).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | None specified        |
| Output rate                      | Output rate in bps and pps.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | None specified        |
| Active alarms and Active defects | <p>Ethernet-specific defects that can prevent the interface from passing packets. When a defect persists for a certain amount of time, it is promoted to an alarm. Based on the switch configuration, an alarm can ring the red or yellow alarm bell on the switch, or turn on the red or yellow alarm LED on the craft interface. These fields can contain the value <b>None</b> or <b>Link</b>.</p> <ul style="list-style-type: none"> <li><b>None</b>—There are no active defects or alarms.</li> <li><b>Link</b>—Interface has lost its link state, which usually means that the cable is unplugged, the far-end system has been turned off, or the PIC is malfunctioning.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | detail extensive none |

Table 30: show interfaces fabric Output Fields (*continued*)

| Field Name                             | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Level of Output |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| MAC statistics                         | <p>Receive and Transmit statistics reported by the PIC's MAC subsystem.</p> <ul style="list-style-type: none"> <li>Total octets and total packets—Total number of octets and packets. For Gigabit Ethernet IQ PICs, the received octets count varies by interface type.</li> <li>Unicast packets, Broadcast packets, and Multicast packets—Number of unicast, broadcast, and multicast packets.</li> <li>CRC/Align errors—Total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, and had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error).</li> <li>FIFO error—Number of FIFO errors that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>MAC control frames—Number of MAC control frames.</li> <li>MAC pause frames—Number of MAC control frames with pause operational code.</li> <li>Oversized frames—Number of packets that exceed the configured MTU.</li> <li>Jabber frames—Number of frames that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. This definition of jabber is different from the definition in IEEE-802.3 section 8.2.1.5 (10BASE5) and section 10.3.1.4 (10BASE2). These documents define jabber as the condition in which any packet exceeds 20 ms. The allowed range to detect jabber is from 20 ms to 150 ms.</li> <li>Fragment frames—Total number of packets that were less than 64 octets in length (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. Fragment frames normally increment because both runts (which are normal occurrences caused by collisions) and noise hits are counted.</li> <li>VLAN tagged frames—Number of frames that are VLAN tagged. The system uses the TPID of 0x8100 in the frame to determine whether a frame is tagged or not. This counter is not supported on EX Series switches and is always displayed as 0.</li> <li>Code violations—Number of times an event caused the PHY to indicate "Data reception error" or "invalid data symbol error."</li> </ul> | extensive       |
| Packet Forwarding Engine Configuration | <p>Information about the configuration of the Packet Forwarding Engine:</p> <ul style="list-style-type: none"> <li>Destination slot—FPC slot number.</li> <li>CoS transmit queue—Queue number and its associated user-configured forwarding class name.</li> <li>Bandwidth %—Percentage of bandwidth allocated to the queue.</li> <li>Buffer usec—Amount of buffer space allocated to the queue, in microseconds. This value is nonzero only if the buffer size is configured in terms of time.</li> <li>Priority—Queue priority: low or high.</li> <li>Limit—Displayed if rate limiting is configured for the queue. Possible values are none and exact. If exact is configured, the queue transmits only up to the configured bandwidth, even if excess bandwidth is available. If none is configured, the queue transmits beyond the configured bandwidth if bandwidth is available.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | extensive       |

---

**Logical Interface**


---

Table 30: show interfaces fabric Output Fields (*continued*)

| Field Name        | Field Description                                                                                                                                                                                                                                                                                                                                                                                  | Level of Output       |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Item              | Type of QFabric system component being viewed. Possible values include Node group, Interconnect device, Fabric control, Fabric manager, Diagnostic routing engine, and Ungrouped Node device.                                                                                                                                                                                                      | none                  |
| Identifier        | Hardware serial identifier of a QFabric system component. When you configure an alias name for a component, the ID is displayed.                                                                                                                                                                                                                                                                   | none                  |
| Connection        | Status of a QFabric system component: either Connected or Disconnected, depending on whether or not the Director software has detected keepalive messages for the listed component.                                                                                                                                                                                                                | none                  |
| Configuration     | Whether or not the configuration for a QFabric system component has been received and installed. The configuration can be Configured, Failed (unsuccessful), Pending (in the process of being written or retried), or Unknown.                                                                                                                                                                     | none                  |
| Node group        | Name of the Node groups associated with the QFabric system, and the Node devices assigned to each Node group. The group can be either Connected or Disconnected, depending on whether or not the Director software has detected keepalive messages for the devices in the group. This field also displays the serial ID for the Node group and the status for the Node group.                      | none                  |
| Fabric control    | Name of the virtual Junos Routing Engines responsible for route selection within a QFabric system partition. The fabric control Routing Engine can be either Connected or Disconnected, depending on whether or not the Director software has detected keepalive messages for this virtual device. It also displays the identifier and configuration status for the fabric control Routing Engine. | none                  |
| Logical interface | Name of the logical interface.                                                                                                                                                                                                                                                                                                                                                                     | All levels            |
| Index             | Index number of the logical interface, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                 | detail extensive none |
| SNMP ifIndex      | SNMP interface index number for the logical interface.                                                                                                                                                                                                                                                                                                                                             | detail extensive none |
| Flags             | Information about the logical interface.<br><br>If unicast Reverse Path Forwarding (uRPF) is explicitly configured on the specified interface, the uRPF flag appears. If uRPF was configured on a different interface (and therefore is enabled on all switch interfaces) but was not explicitly configured on the specified interface, the uRPF flag does not appear even though uRPF is enabled. | All levels            |
| Encapsulation     | Encapsulation method used on the logical interface.                                                                                                                                                                                                                                                                                                                                                | All levels            |

Table 30: show interfaces fabric Output Fields (*continued*)

| Field Name             | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output       |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Traffic statistics     | <p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> <li>Input bytes—Number of bytes received on the interface.</li> <li>Output bytes—Number of bytes transmitted on the interface.</li> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p> | detail extensive      |
| Local statistics       | <ul style="list-style-type: none"> <li>Input bytes—Number of bytes received on the interface.</li> <li>Output bytes—Number of bytes transmitted on the interface.</li> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                                                                                 | detail extensive      |
| Transit statistics     | <ul style="list-style-type: none"> <li>Input bytes—Number of bytes received on the interface.</li> <li>Output bytes—Number of bytes transmitted on the interface.</li> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                                                                                 | detail extensive      |
| <i>protocol-family</i> | Protocol family configured on the logical interface. If the protocol is inet, the IP address of the interface is also displayed.                                                                                                                                                                                                                                                                                                                                                       | brief                 |
| Generation             | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                      | detail extensive      |
| Route table            | Route table in which the logical interface address is located. For example, 0 refers to the routing table inet.0.                                                                                                                                                                                                                                                                                                                                                                      | detail extensive none |

## Sample Output

### show interfaces fabric

```

user@switch> show interfaces fabric
Item Identifier Connection Configuration
Node group
 BBAK3775 Connected Configured
 NW-NG-0 Connected Configured
 P2659-C Connected Configured
 ptor-0 Connected Configured
Fabric control
 FC-0 Connected Configured
 FC-1 Connected Configured

```

### show interfaces fabric brief

```

user@switch> show interfaces fabric brief

```

Physical interface: BBAK0372:fte-0/1/0, Enabled, Physical link is Up  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface BBAK0372:fte-0/1/0.32768  
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
 eth-switch

Physical interface: BBAK0372:fte-0/1/2, Enabled, Physical link is Up  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface BBAK0372:fte-0/1/2.32768  
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
 eth-switch

Physical interface: BBAK0394:fte-0/1/0, Enabled, Physical link is Up  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x4000

Logical interface BBAK0394:fte-0/1/0.32768  
 Flags: SNMP-Traps Encapsulation: ENET2  
 eth-switch

Physical interface: BBAK0394:fte-0/1/2, Enabled, Physical link is Up  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x4000

Logical interface BBAK0394:fte-0/1/2.32768  
 Flags: SNMP-Traps Encapsulation: ENET2  
 eth-switch

Physical interface: BBAK3775:bme0, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1500, Clocking: Unspecified,  
 Speed: Unspecified  
 Device flags : Present Running

Logical interface BBAK3775:bme0.0  
 Flags: LinkAddress 0-0 Encapsulation: ENET2  
 inet 128.0.0.1/2  
 128.0.0.16/2  
 128.0.32.0/2  
 tnp 0x10

Logical interface BBAK3775:bme0.1  
 Flags: LinkAddress 0-0 Encapsulation: ENET2  
 inet 128.0.0.13/2  
 128.0.130.0/2

Logical interface BBAK3775:bme0.2  
 Flags: Encapsulation: ENET2  
 inet 128.0.0.13/8  
 128.0.130.0/8

169.254.128.13/16  
169.254.193.0/16

Physical interface: BBAK3775:qfabric, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: Ethernet, MTU: 1572, Clocking: Unspecified, Speed: Unspecified  
Device flags : Present Running  
Interface flags: SNMP-Traps

Logical interface BBAK3775:qfabric.0  
Flags: SNMP-Traps Encapsulation: ENET2  
inet  
mpls  
eth-switch

Physical interface: BBAK3775:vcp0, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: 70, MTU: 1514, Clocking: Unspecified, Speed: 1000mbps  
Device flags : Present Running

Logical interface BBAK3775:vcp0.32769  
Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: BBAK3775:vcp1, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: 70, MTU: 1496, Clocking: Unspecified, Speed: 1000mbps  
Device flags : Present Running

Logical interface BBAK3775:vcp1.32768  
Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: BBAK3775:vcp2, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: 70, MTU: 1496, Clocking: Unspecified, Speed: 1000mbps  
Device flags : Present Running

Logical interface BBAK3775:vcp2.32768  
Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: BBAK3775:fte-0/1/0, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
Device flags : Present Running  
Interface flags: SNMP-Traps Internal: 0x0

Logical interface BBAK3775:fte-0/1/0.32768  
Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
eth-switch

Physical interface: EE3093:fte-0/1/0, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
Device flags : Present Running  
Interface flags: SNMP-Traps Internal: 0x0

Logical interface EE3093:fte-0/1/0.32768  
Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
eth-switch

Physical interface: EE3093:fte-0/1/2, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,



Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
Device flags : Present Running  
Interface flags: SNMP-Traps Internal: 0x0

Logical interface EE3093:fte-0/1/2.32768  
Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
eth-switch

Physical interface: IC-WS001:fte-0/0/0, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
Device flags : Present Running  
Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/0.32768  
Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
eth-switch

Physical interface: IC-WS001:fte-0/0/4, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
Device flags : Present Running  
Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/4.32768  
Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
eth-switch

Physical interface: IC-WS001:fte-0/0/6, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
Device flags : Present Running  
Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/6.32768  
Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
eth-switch

Physical interface: IC-WS001:fte-0/0/13, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
Device flags : Present Running  
Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/13.32768  
Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
eth-switch

Physical interface: IC-WS001:fte-0/0/15, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
Device flags : Present Running  
Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/15.32768  
Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
eth-switch

Physical interface: IC-WS001:fte-1/0/2, Enabled, Physical link is Up  
Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled

```

Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-1/0/2.32768
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2
 eth-switch

Physical interface: IC-WS001:fte-1/0/7, Enabled, Physical link is Up
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-1/0/7.32768
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2
 eth-switch

Physical interface: IC-WS001:fte-1/0/10, Enabled, Physical link is Up
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-1/0/10.32768
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2
 eth-switch

Physical interface: IC-WS001:bme0, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: Ethernet, MTU: 1500, Clocking: Unspecified,
 Speed: Unspecified
 Device flags : Present Running

Logical interface IC-WS001:bme0.0
 Flags: LinkAddress 0-0 Encapsulation: ENET2
 inet 128.0.32.0 --> 0/0

Logical interface IC-WS001:bme0.1
 Flags: LinkAddress 0-0 Encapsulation: ENET2
 inet 128.0.0.7/2
 128.0.130.2/2

Logical interface IC-WS001:bme0.2
 Flags: Encapsulation: ENET2
 inet 128.0.0.7/8
 128.0.130.2/8
 169.254.128.7/16
 169.254.193.1/16

Physical interface: IC-WS001:bme1, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
 Speed: 1000mbps
 Device flags : Present Running
 Interface flags: SNMP-Traps

Logical interface IC-WS001:bme1.0
 Flags: Encapsulation: ENET2
 inet 128.0.0.1/2
 128.0.0.4/2
 128.0.0.16/2
 128.0.0.17/2
 128.0.0.24/2

```

```

128.0.0.25/2
128.0.0.26/2
128.0.0.28/2
128.0.0.29/2
128.0.0.31/2
tnp 0x4

```

Physical interface: IC-WS001:qfabric, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1572, Clocking: Unspecified,  
 Speed: Unspecified  
 Device flags : Present Running  
 Interface flags: SNMP-Traps

Logical interface IC-WS001:qfabric.0  
 Flags: SNMP-Traps Encapsulation: ENET2  
 inet  
 mpls  
 eth-switch

Physical interface: IC-WS001:pme0, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Clocking: Unspecified,  
 Speed: 1000mbps  
 Device flags : Present Running  
 Interface flags: SNMP-Traps

Physical interface: IC-WS001:pme1, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Clocking: Unspecified,  
 Speed: 1000mbps  
 Device flags : Present Running  
 Interface flags: SNMP-Traps

Physical interface: IC-WS001:pme2, Enabled, Physical link is Down  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Clocking: Unspecified,  
 Speed: 1000mbps  
 Device flags : Present Running  
 Interface flags: SNMP-Traps

Physical interface: IC-WS001:pme3, Enabled, Physical link is Down  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Clocking: Unspecified,  
 Speed: 1000mbps  
 Device flags : Present Running  
 Interface flags: SNMP-Traps

Physical interface: IC-WS001:vcp0, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: 70, MTU: 1514, Clocking: Unspecified, Speed:  
 1000mbps  
 Device flags : Present Running

Logical interface IC-WS001:vcp0.32769  
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: IC-WS001:vcp1, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: 70, MTU: 1492, Clocking: Unspecified, Speed:  
 1000mbps  
 Device flags : Present Running

Logical interface IC-WS001:vcp1.32768  
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: IC-WS001:vcp2, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: 70, MTU: 1492, Clocking: Unspecified, Speed:

```
1000mbps
Device flags : Present Running

Logical interface IC-WS001:vcp2.32768
Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: IC-WS001:vcp3, Enabled, Physical link is Down
Type: Ethernet, Link-level type: 70, MTU: 1492, Clocking: Unspecified, Speed:
1000mbps
Device flags : Present Running

Logical interface IC-WS001:vcp3.32768
Flags: Device-Down LinkAddress 0-0 Encapsulation: ENET2

Physical interface: IC-WS001:vcp4, Enabled, Physical link is Down
Type: Ethernet, Link-level type: 70, MTU: 1492, Clocking: Unspecified, Speed:
1000mbps
Device flags : Present Running

Logical interface IC-WS001:vcp4.32768
Flags: Device-Down LinkAddress 0-0 Encapsulation: ENET2

Physical interface: NW-NG-0:bme0, Enabled, Physical link is Up
Type: Ethernet, Link-level type: Ethernet, MTU: 1500, Clocking: Unspecified,
Speed: Unspecified
Device flags : Present Running

Logical interface NW-NG-0:bme0.0
Flags: LinkAddress 0-0 Encapsulation: ENET2
inet 128.0.0.1/2
 128.0.0.5/2
 128.0.32.0/2
tnp 0x5

Logical interface NW-NG-0:bme0.1
Flags: LinkAddress 0-0 Encapsulation: ENET2
inet 128.0.0.9/2
 128.0.128.4/2

Logical interface NW-NG-0:bme0.2
Flags: Encapsulation: ENET2
inet 128.0.0.9/8
 128.0.128.68/8
 169.254.128.9/16
 169.254.192.34/16

Physical interface: NW-NG-0:qfabric, Enabled, Physical link is Up
Type: Ethernet, Link-level type: Ethernet, MTU: 1572, Clocking: Unspecified,
Speed: Unspecified
Device flags : Present Running
Interface flags: SNMP-Traps

Logical interface NW-NG-0:qfabric.0
Flags: SNMP-Traps Encapsulation: ENET2
inet
mpls
eth-switch

Physical interface: NW-NG-0:vcp0, Enabled, Physical link is Up
Type: Ethernet, Link-level type: 70, MTU: 1514, Clocking: Unspecified, Speed:
1000mbps
```

```

Device flags : Present Running

Logical interface NW-NG-0:vcp0.32769
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: NW-NG-0:vcp1, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: 70, MTU: 1496, Clocking: Unspecified, Speed:
1000mbps
 Device flags : Present Running

Logical interface NW-NG-0:vcp1.32768
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: P2659-C:bme0, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: Ethernet, MTU: 1500, Clocking: Unspecified,
Speed: Unspecified
 Device flags : Present Running

Logical interface P2659-C:bme0.0
 Flags: LinkAddress 0-0 Encapsulation: ENET2
 inet 128.0.0.1/2
 128.0.0.16/2
 128.0.32.0/2
 tnp 0x10

Logical interface P2659-C:bme0.1
 Flags: LinkAddress 0-0 Encapsulation: ENET2
 inet 128.0.0.8/2
 128.0.130.4/2

Logical interface P2659-C:bme0.2
 Flags: Encapsulation: ENET2
 inet 128.0.0.8/8
 128.0.130.4/8
 169.254.128.8/16
 169.254.193.2/16

Physical interface: P2659-C:qfabric, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: Ethernet, MTU: 1572, Clocking: Unspecified,
Speed: Unspecified
 Device flags : Present Running
 Interface flags: SNMP-Traps

Logical interface P2659-C:qfabric.0
 Flags: SNMP-Traps Encapsulation: ENET2
 inet
 mpls
 eth-switch

Physical interface: P2659-C:vcp0, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: 70, MTU: 1514, Clocking: Unspecified, Speed:
1000mbps
 Device flags : Present Running

Logical interface P2659-C:vcp0.32769
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: P2659-C:vcp1, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: 70, MTU: 1496, Clocking: Unspecified, Speed:
1000mbps
 Device flags : Present Running

```

Logical interface P2659-C:vcp1.32768  
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: P2659-C:vcp2, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: 70, MTU: 1496, Clocking: Unspecified, Speed: 1000mbps  
 Device flags : Present Running

Logical interface P2659-C:vcp2.32768  
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: P2659-C:fte-0/1/2, Enabled, Physical link is Up  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface P2659-C:fte-0/1/2.32768  
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2  
 eth-switch

Physical interface: ptor-0:bme0, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1500, Clocking: Unspecified, Speed: Unspecified  
 Device flags : Present Running

Logical interface ptor-0:bme0.0  
 Flags: LinkAddress 0-0 Encapsulation: ENET2  
 inet 128.0.0.1/2  
       128.0.0.17/2  
       128.0.32.0/2  
 tnp 0x11

Logical interface ptor-0:bme0.1  
 Flags: LinkAddress 0-0 Encapsulation: ENET2  
 inet 128.0.0.16/2  
       128.0.130.18/2

Logical interface ptor-0:bme0.2  
 Flags: Encapsulation: ENET2  
 inet 128.0.0.16/8  
       128.0.130.18/8  
       169.254.128.16/16  
       169.254.193.9/16

Physical interface: ptor-0:qfabric, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1572, Clocking: Unspecified, Speed: Unspecified  
 Device flags : Present Running  
 Interface flags: SNMP-Traps

Logical interface ptor-0:qfabric.0  
 Flags: SNMP-Traps Encapsulation: ENET2  
 inet  
 mpls  
 eth-switch

Physical interface: ptor-0:vcp0, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: 70, MTU: 1514, Clocking: Unspecified, Speed: 1000mbps

```

Device flags : Present Running

Logical interface ptor-0:vcp0.32769
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: ptor-0:vcp1, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: 70, MTU: 1496, Clocking: Unspecified, Speed:
1000mbps
 Device flags : Present Running

Logical interface ptor-0:vcp1.32768
 Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: ptor-0:vcp2, Enabled, Physical link is Up
 Type: Ethernet, Link-level type: 70, MTU: 1496, Clocking: Unspecified, Speed:
1000mbps
 Device flags : Present Running

Logical interface ptor-0:vcp2.32768
 Flags: LinkAddress 0-0 Encapsulation: ENET2

```

#### show interfaces fabric detail

```

user@switch> show interfaces fabric detail
Physical interface: BBAK0372:fte-0/1/0, Enabled, Physical link is Up
 Interface index: 49165, SNMP ifIndex: 1212678666, Generation: 140
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 CoS queues : 12 supported, 12 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 84:18:88:d1:fa:1f, Hardware address: 84:18:88:d1:fa:1f
 Last flapped : 2012-11-09 21:36:41 UTC (4d 00:23 ago)
 Statistics last cleared: Never
Traffic statistics:
 Input bytes : 14256654 0 bps
 Output bytes : 9618986 0 bps
 Input packets : 90511 0 pps
 Output packets : 60101 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets : 0
 Output packets : 0
Egress queues: 12 supported, 5 in use
Queue counters: Queued packets Transmitted packets Dropped packets

 0 best-effort 0 0 0
 3 fcoe 0 0 0
 4 no-loss 0 0 0
 7 network-cont 0 0 0
 8 mcast 0 0 0

Active alarms : None
Active defects : None

```

```

Logical interface BBAK0372:fte-0/1/0.32768 (Index 71) (SNMP ifIndex 1212678667)
(Generation 136)
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2
 Traffic statistics:
 Input bytes : 12450372
 Output bytes : 11986557
 Input packets: 90510
 Output packets: 62750
 Local statistics:
 Input bytes : 12450372
 Output bytes : 11986557
 Input packets: 90510
 Output packets: 62750
 Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
 Protocol eth-switch, MTU: 0, Generation: 163, Route table: 0

```

#### show interfaces fabric extensive

```
user@switch> show interfaces fabric extensive
```

```

Physical interface: IC-WS001:fte-0/0/6, Enabled, Physical link is Up
 Interface index: 49176, SNMP ifIndex: 1209008655, Generation: 155
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled,
 Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 CoS queues : 12 supported, 12 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 00:00:00:00:00:06, Hardware address: 00:00:00:00:00:06
 Last flapped : 2012-11-13 23:53:30 UTC (00:53:20 ago)
 Statistics last cleared: Never
 Traffic statistics:
 Input bytes : 91179 0 bps
 Output bytes : 361268221791 952985992 bps
 Input packets: 590 0 pps
 Output packets: 2580487185 850880 pps
 IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
 Input errors:
 Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
 incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
 Resource errors: 0
 Output errors:
 Carrier transitions: 1, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
 FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
 Egress queues: 12 supported, 5 in use
 Queue counters:
 Queued packets Transmitted packets Dropped packets

 0 fabric_fcset 0 0 0
 1 fabric_fcset 0 0 0

```



```

2 fabric_fcset 0 0 0
3 fabric_fcset 0 0 0
4 fabric_fcset 0 0 0
5 fabric_fcset 0 0 0
6 fabric_fcset 0 0 0
7 fabric_fcset 0 0 0
8 fabric_fcset 0 2582632925 0
9 fabric_fcset 0 0 0
10 fabric_fcset 0 0
0
11 fabric_fcset 0 0
0
Active alarms : None
Active defects : None
MAC statistics:
 Receive Transmit
 Total octets 91179 361268221791
 Total packets 590 2580487185
 Unicast packets 590 2580487185
 Broadcast packets 0 0
 Multicast packets 0 0
 CRC/Align errors 0 0
 FIFO errors 0 0
 MAC control frames 0 0
 MAC pause frames 0 0
 Oversized frames 0
 Jabber frames 0
 Fragment frames 0
 VLAN tagged frames 0
 Code violations 0
MAC Priority Flow Control Statistics:
 Priority : 0 0 0
 Priority : 1 0 0
 Priority : 2 0 0
 Priority : 3 0 0
 Priority : 4 0 0
 Priority : 5 0 0
 Priority : 6 0 0
 Priority : 7 0 0
Packet Forwarding Engine configuration:
 Destination slot: 0
 Direction : Output
 CoS transmit queue Bandwidth Buffer Priority
Limit
 0 best-effort % bps % usec low
none 5 2000000000 5 0
 3 fcoe 35 14000000000 35 0 low
none 35 14000000000 35 0
 4 no-loss 35 14000000000 35 0 low
none 35 14000000000 35 0
 7 network-control 5 2000000000 5 0 low
none 5 2000000000 5 0

```

```

 8 mcast 20 8000000000 20 0 low
none

```

Logical interface IC-WS001:fte-0/0/6.32768 (Index 85) (SNMP ifIndex 1209008656)  
(Generation 150)

Flags: SNMP-Traps 0x0 Encapsulation: ENET2

Traffic statistics:

```

Input bytes : 79496
Output bytes : 179860
Input packets: 590
Output packets: 948

```

Local statistics:

```

Input bytes : 79496
Output bytes : 179860
Input packets: 590
Output packets: 948

```

Transit statistics:

```

Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps

```

Protocol eth-switch, MTU: 0, Generation: 178, Route table: 0

#### show interfaces fabric terse

```
user@switch> show interfaces fabric terse
```

| Item           | Identifier | Connection | Configuration |
|----------------|------------|------------|---------------|
| Node group     |            |            |               |
| BBAK3775       |            | Connected  | Configured    |
| NW-NG-0        |            | Connected  | Configured    |
| P2659-C        |            | Connected  | Configured    |
| ptor-0         |            | Connected  | Configured    |
| Fabric control |            |            |               |
| FC-0           |            | Connected  | Configured    |
| FC-1           |            | Connected  | Configured    |

#### show interfaces fabric device-name

```
user@switch> show interfaces fabric IC-WS001:fte-0/0/13
```

Physical interface: IC-WS001:fte-0/0/13, Enabled, Physical link is Up

Interface index: 49177, SNMP ifIndex: 1209008767

Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU  
Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:  
Disabled,

Flow control: Disabled

Device flags : Present Running

Interface flags: SNMP-Traps Internal: 0x0

CoS queues : 12 supported, 12 maximum usable queues

Current address: 00:00:00:00:00:0d, Hardware address: 00:00:00:00:00:0d

Last flapped : 2012-11-13 23:55:15 UTC (00:55:38 ago)

Input rate : 0 bps (0 pps)

Output rate : 0 bps (0 pps)

Active alarms : None

Active defects : None

Logical interface IC-WS001:fte-0/0/13.32768 (Index 86) (SNMP ifIndex 1209008768)

Flags: SNMP-Traps 0x0 Encapsulation: ENET2

Input packets : 748

Output packets: 954

Protocol eth-switch, MTU: 0



## show interfaces statistics fabric

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>show interfaces statistics fabric</code><br><code>&lt;brief   detail   terse&gt;</code><br><code>&lt;descriptions&gt;</code><br><code>&lt;interface-name&gt;</code><br><code>&lt;media&gt;</code><br><code>&lt;routing-instance (all   instance-name)&gt;</code><br><code>&lt;snmp-index snmp-index&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>      | Command introduced in Junos OS Release 12.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | Display status information about the specified fabric interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Options</b>                  | <p><b>brief   detail   terse</b>—(Optional) Display the specified level of output.</p> <p><b>descriptions</b>—(Optional) Display interface description strings.</p> <p><b>interface-name</b>—(QFabric systems only) The interface name is either the serial number or the alias of the QFabric switch component, such as a Node device, Interconnect device, or QFabric infrastructure. The name must contain a maximum of 128 characters and not contain any colons.</p> <p><b>media</b>—(Optional) Display media-specific information about network interfaces.</p> <p><b>routing-instance (all   instance-name)</b>—(Optional) Display all routing instances or the name of an individual routing instance.</p> <p><b>snmp-index snmp-index</b>—(Optional) Display information for the specified SNMP index of the interface.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Monitoring Interface Status and Traffic on page 60</a></li><li>• <a href="#">Troubleshooting Network Interfaces on page 62</a></li><li>• <a href="#">Troubleshooting an Aggregated Ethernet Interface on page 89</a></li><li>• <a href="#">Junos OS Network Interfaces Library for Routing Devices</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>List of Sample Output</b>    | <a href="#">show interfaces statistics fabric on page 329</a><br><a href="#">show interfaces statistics fabric brief on page 336</a><br><a href="#">show interfaces statistics fabric detail on page 339</a><br><a href="#">show interfaces statistics fabric terse on page 340</a><br><a href="#">show interfaces statistics fabric device-name on page 341</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Output Fields</b>            | <a href="#">Table 31 on page 325</a> lists the output fields for the <b>show interfaces statistics fabric</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

Table 31: show interfaces statistics fabric Output Fields

| Field Name                | Field Description                                                                                                                                                                                                                                    | Level of Output |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Physical Interface</b> |                                                                                                                                                                                                                                                      |                 |
| Physical interface        | Name of the physical interface.                                                                                                                                                                                                                      | All levels      |
| Enabled                   | State of the interface.                                                                                                                                                                                                                              | All levels      |
| Interface index           | Index number of the physical interface, which reflects its initialization sequence.                                                                                                                                                                  | detail none     |
| SNMP ifIndex              | SNMP index number for the physical interface.                                                                                                                                                                                                        | detail none     |
| Link-level type           | Encapsulation being used on the physical interface.                                                                                                                                                                                                  | All levels      |
| MTU                       | Maximum transmission unit size on the physical interface.                                                                                                                                                                                            | All levels      |
| Clocking                  | Reference clock source.                                                                                                                                                                                                                              | detail          |
| Speed                     | Speed at which the interface is running.                                                                                                                                                                                                             | All levels      |
| Duplex                    | Duplex mode of the interface, either Full-Duplex or Half-Duplex.                                                                                                                                                                                     | All levels      |
| MAC-REWRITE Error         | Specifies if the encapsulation of the packet has been changed.                                                                                                                                                                                       | none            |
| BPDU Error                | Specifies if a BPDU has been received on a blocked interface.                                                                                                                                                                                        | none            |
| Loopback                  | Loopback status: Enabled or Disabled. If loopback is enabled, type of loopback: Local or Remote.                                                                                                                                                     | All levels      |
| Source filtering          | Source filtering status: Enabled or Disabled.                                                                                                                                                                                                        | All levels      |
| Flow control              | Flow control status: Enabled or Disabled. This field is only displayed if asymmetric flow control is not configured.                                                                                                                                 | All levels      |
| Device flags              | Information about the physical device.                                                                                                                                                                                                               | All levels      |
| Interface flags           | Information about the interface.                                                                                                                                                                                                                     | All levels      |
| CoS queues                | Number of CoS queues configured.                                                                                                                                                                                                                     | detail none     |
| Hold-Times                | Current interface hold-time up and hold-time down, in milliseconds.                                                                                                                                                                                  | detail          |
| Current address           | Configured MAC address.                                                                                                                                                                                                                              | detail none     |
| Hardware address          | Hardware MAC address.                                                                                                                                                                                                                                | detail none     |
| Last flapped              | Date, time, and how long ago the interface went from down to up. The format is <b>Last flapped: year-month-day hour:minute:second:timezone (hour:minute:second ago)</b> . For example, <b>Last flapped: 2008-01-16 10:52:40 UTC (3d 22:58 ago)</b> . | detail none     |

Table 31: show interfaces statistics fabric Output Fields (*continued*)

| Field Name              | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Statistics last cleared | Date, time, and how long ago the statistics for the interface were cleared. The format is <b>Statistics last cleared: year-month-day hour:minute:second:timezone (hour:minute:second ago)</b> . For example, 2010-05-17 07:51:28 PDT (00:04:33 ago).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | detail          |
| Traffic statistics      | <p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> <li>Input bytes—Number of bytes received on the interface.</li> <li>Output bytes—Number of bytes transmitted on the interface.</li> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | detail          |
| IPv6 transit statistics | <p>If IPv6 statistics tracking is enabled, number of IPv6 bytes and packets received and transmitted on the logical interface:</p> <ul style="list-style-type: none"> <li>Input bytes—Number of bytes received on the interface.</li> <li>Output bytes—Number of bytes transmitted on the interface.</li> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | detail          |
| Input errors            | <p>Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>Errors—Sum of the incoming frame aborts and FCS errors.</li> <li>Drops—Number of packets dropped by the input queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>Framing errors—Number of packets received with an invalid frame checksum (FCS).</li> <li>Runts—Number of frames received that are smaller than the runt threshold.</li> <li>Policed discards—Number of frames that the incoming packet match code discarded because they were not recognized or not of interest. Usually, this field reports protocols that Junos OS does not handle.</li> <li>L3 incompletes—Number of incoming packets discarded because they failed Layer 3 sanity checks of the header. For example, a frame with less than 20 bytes of available IP header is discarded. L3 incomplete errors can be ignored if you configure the ignore-l3-incompletes statement.</li> <li>L2 channel errors—Number of times the software did not find a valid logical interface for an incoming frame.</li> <li>L2 mismatch timeouts—Number of malformed or short packets that caused the incoming packet handler to discard the frame as unreadable.</li> <li>FIFO errors—Number of FIFO errors in the receive direction that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>Resource errors—Sum of transmit drops.</li> </ul> | detail none     |

Table 31: show interfaces statistics fabric Output Fields (*continued*)

| Field Name               | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Level of Output |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Output errors            | <p>Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>Carrier transitions—Number of times the interface has gone from down to up. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the PIC or PIM is malfunctioning.</li> <li>Errors—Sum of the outgoing frame aborts and FCS errors.</li> <li>Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>Collisions—Number of Ethernet collisions. The Gigabit Ethernet PIC supports only full-duplex operation, so for Gigabit Ethernet PICs, this number should always remain 0. If it is nonzero, there is a software bug.</li> <li>Aged packets—Number of packets that remained in shared packet SDRAM so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly malfunctioning hardware.</li> <li>FIFO errors—Number of FIFO errors in the send direction as reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>HS link CRC errors—Number of errors on the high-speed links between the ASICs responsible for handling the fabric interfaces.</li> <li>MTU errors—Number of packets whose size exceeded the MTU of the interface.</li> <li>Resource errors—Sum of transmit drops.</li> </ul> | detail none     |
| Egress queues            | Total number of egress queues supported on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | detail          |
| Queue counters           | <p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> <li>Queued packets—Number of queued packets.</li> <li>Transmitted packets—Number of transmitted packets.</li> <li>Dropped packets—Number of packets dropped by the ASIC's RED mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | detail          |
| Input rate               | Input rate in bits per second (bps) and packets per second (pps).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | None specified  |
| Output rate              | Output rate in bps and pps.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | None specified  |
| <b>Logical Interface</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |
| Logical interface        | Name of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | All levels      |
| Index                    | Index number of the logical interface, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | detail none     |
| SNMP ifIndex             | SNMP interface index number for the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | detail none     |

Table 31: show interfaces statistics fabric Output Fields (*continued*)

| Field Name             | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Flags                  | <p>Information about the logical interface.</p> <p>If unicast Reverse Path Forwarding (uRPF) is explicitly configured on the specified interface, the uRPF flag appears. If uRPF was configured on a different interface (and therefore is enabled on all switch interfaces) but was not explicitly configured on the specified interface, the uRPF flag does not appear even though uRPF is enabled.</p>                                                                              | All levels      |
| Input packets          | Number of packets received on the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                           | detail none     |
| Output packets         | Number of packets transmitted on the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                        | detail none     |
| Input packets          | Number of packets received on the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                           | detail none     |
| Output packets         | Number of packets transmitted on the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                        | detail none     |
| Encapsulation          | <p>Encapsulation method used on the logical interface.</p> <ul style="list-style-type: none"> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul>                                                                                                                                                                                                                                        | All levels      |
| Traffic statistics     | <p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> <li>Input bytes—Number of bytes received on the interface.</li> <li>Output bytes—Number of bytes transmitted on the interface.</li> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p> | detail          |
| Local statistics       | <ul style="list-style-type: none"> <li>Input bytes—Number of bytes received on the interface.</li> <li>Output bytes—Number of bytes transmitted on the interface.</li> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                                                                                 | detail          |
| Transit statistics     | <ul style="list-style-type: none"> <li>Input bytes—Number of bytes received on the interface.</li> <li>Output bytes—Number of bytes transmitted on the interface.</li> <li>Input packets—Number of packets received on the interface.</li> <li>Output packets—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                                                                                 | detail          |
| Addresses, Flags       | Information about the address flags.                                                                                                                                                                                                                                                                                                                                                                                                                                                   | detail none     |
| <i>protocol-family</i> | Protocol family configured on the logical interface. If the protocol is <b>inet</b> , the IP address of the interface is also displayed.                                                                                                                                                                                                                                                                                                                                               | brief           |



Table 31: show interfaces statistics fabric Output Fields (*continued*)

| Field Name  | Field Description                                                                                                 | Level of Output |
|-------------|-------------------------------------------------------------------------------------------------------------------|-----------------|
| MTU         | Maximum transmission unit size on the physical interface.                                                         | All levels      |
| Destination | IP address of the remote side of the connection.                                                                  | detail none     |
| Local       | IP address of the logical interface.                                                                              | detail none     |
| Broadcast   | Broadcast address of the logical interlace.                                                                       | detail none     |
| Generation  | Unique number for use by Juniper Networks technical support only.                                                 | detail          |
| Route table | Route table in which the logical interface address is located. For example, 0 refers to the routing table inet.0. | detail none     |

## Sample Output

### show interfaces statistics fabric

```

user@switch> show interfaces statistic fabric
Physical interface: IC-WS001:fte-0/0/0, Enabled, Physical link is Down
 Interface index: 49174, SNMP ifIndex: 1208484473
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 CoS queues : 12 supported, 12 maximum usable queues
 Current address: 00:00:00:00:00:00, Hardware address: 00:00:00:00:00:00
 Last flapped : 2012-11-27 20:30:30 UTC (01:55:19 ago)
 Statistics last cleared: Never
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)
 Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-0/0/0.32768 (Index 83) (SNMP ifIndex 1208484474)

 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2
 Input packets : 0
 Output packets: 0
 Protocol eth-switch, MTU: 0

Physical interface: IC-WS001:fte-0/0/4, Enabled, Physical link is Down
 Interface index: 49175, SNMP ifIndex: 1208484363
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 CoS queues : 12 supported, 12 maximum usable queues
 Current address: 00:00:00:00:00:04, Hardware address: 00:00:00:00:00:04
 Last flapped : 2012-11-27 20:30:30 UTC (01:55:20 ago)
 Statistics last cleared: Never
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)

```

Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-0/0/4.32768 (Index 84) (SNMP ifIndex 1208484364)

Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2

Input packets : 0

Output packets: 0

Protocol eth-switch, MTU: 0

Physical interface: IC-WS001:fte-0/0/6, Enabled, Physical link is Down

Interface index: 49176, SNMP ifIndex: 1208484367

Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU

Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:

Disabled, Flow control: Disabled

Device flags : Present Running

Interface flags: SNMP-Traps Internal: 0x0

CoS queues : 12 supported, 12 maximum usable queues

Current address: 00:00:00:00:00:06, Hardware address: 00:00:00:00:00:06

Last flapped : 2012-11-27 20:30:30 UTC (01:55:20 ago)

Statistics last cleared: Never

Input rate : 0 bps (0 pps)

Output rate : 0 bps (0 pps)

Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-0/0/6.32768 (Index 85) (SNMP ifIndex 1208484368)

Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2

Input packets : 0

Output packets: 0

Protocol eth-switch, MTU: 0

Physical interface: IC-WS001:fte-0/0/13, Enabled, Physical link is Down

Interface index: 49177, SNMP ifIndex: 1208484479

Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU

Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:

Disabled, Flow control: Disabled

Device flags : Present Running

Interface flags: SNMP-Traps Internal: 0x0

CoS queues : 12 supported, 12 maximum usable queues

Current address: 00:00:00:00:00:0d, Hardware address: 00:00:00:00:00:0d

Last flapped : 2012-11-27 20:30:30 UTC (01:55:20 ago)

Statistics last cleared: Never

Input rate : 0 bps (0 pps)

Output rate : 0 bps (0 pps)

Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-0/0/13.32768 (Index 86) (SNMP ifIndex 1208484480)

Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2

Input packets : 0

Output packets: 0

Protocol eth-switch, MTU: 0

Physical interface: IC-WS001:fte-0/0/15, Enabled, Physical link is Down

Interface index: 49178, SNMP ifIndex: 1208484475

Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU

Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:

Disabled, Flow control: Disabled

Device flags : Present Running

Interface flags: SNMP-Traps Internal: 0x0

CoS queues : 12 supported, 12 maximum usable queues

Current address: 00:00:00:00:00:0f, Hardware address: 00:00:00:00:00:0f  
 Last flapped : 2012-11-27 20:30:30 UTC (01:55:20 ago)  
 Statistics last cleared: Never  
 Input rate : 0 bps (0 pps)  
 Output rate : 0 bps (0 pps)  
 Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-0/0/15.32768 (Index 87) (SNMP ifIndex 1208484476)

Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2  
 Input packets : 0  
 Output packets: 0  
 Protocol eth-switch, MTU: 0

Physical interface: IC-WS001:fte-1/0/2, Enabled, Physical link is Down  
 Interface index: 49211, SNMP ifIndex: 1208484377  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU  
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:  
 Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x0  
 CoS queues : 12 supported, 12 maximum usable queues  
 Current address: 00:00:00:00:00:02, Hardware address: 00:00:00:00:00:02  
 Last flapped : 2012-11-27 20:30:47 UTC (01:55:03 ago)  
 Statistics last cleared: Never  
 Input rate : 0 bps (0 pps)  
 Output rate : 0 bps (0 pps)  
 Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-1/0/2.32768 (Index 120) (SNMP ifIndex 1208484378)

Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2  
 Input packets : 0  
 Output packets: 0  
 Protocol eth-switch, MTU: 0

Physical interface: IC-WS001:fte-1/0/7, Enabled, Physical link is Down  
 Interface index: 49212, SNMP ifIndex: 1208484365  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU  
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:  
 Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x0  
 CoS queues : 12 supported, 12 maximum usable queues  
 Current address: 00:00:00:00:00:07, Hardware address: 00:00:00:00:00:07  
 Last flapped : 2012-11-27 20:30:47 UTC (01:55:04 ago)  
 Statistics last cleared: Never  
 Input rate : 0 bps (0 pps)  
 Output rate : 0 bps (0 pps)  
 Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-1/0/7.32768 (Index 121) (SNMP ifIndex 1208484366)

Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2  
 Input packets : 0  
 Output packets: 0  
 Protocol eth-switch, MTU: 0

Physical interface: IC-WS001:fte-1/0/10, Enabled, Physical link is Down  
 Interface index: 49213, SNMP ifIndex: 1208484625  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU

Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled

Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x0  
 CoS queues : 12 supported, 12 maximum usable queues  
 Current address: 00:00:00:00:00:0a, Hardware address: 00:00:00:00:00:0a  
 Last flapped : 2012-11-27 20:30:47 UTC (01:55:04 ago)  
 Statistics last cleared: Never  
 Input rate : 0 bps (0 pps)  
 Output rate : 0 bps (0 pps)  
 Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-1/0/10.32768 (Index 122) (SNMP ifIndex 1208484626)

Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2  
 Input packets : 0  
 Output packets: 0  
 Protocol eth-switch, MTU: 0

Physical interface: IC-WS001:bme0, Enabled, Physical link is Up

Interface index: 64, SNMP ifIndex: 1208483877  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1500  
 Device flags : Present Running  
 Current address: 02:00:00:00:40:06, Hardware address: 02:00:00:00:40:01  
 Last flapped : Never  
 Statistics last cleared: Never  
 Input packets : 0  
 Output packets: 26730  
 Input errors: 0, Output errors: 0

Logical interface IC-WS001:bme0.0 (Index 4) (SNMP ifIndex 1208484065)

Flags: LinkAddress 0-0 Encapsulation: ENET2  
 Input packets : 2715  
 Output packets: 18  
 Protocol inet, MTU: 1482  
 Local: 128.0.32.0

Logical interface IC-WS001:bme0.1 (Index 5) (SNMP ifIndex 1208484091)

Flags: LinkAddress 0-0 Encapsulation: ENET2  
 Input packets : 0  
 Output packets: 999  
 Protocol inet, MTU: 1482  
 Addresses  
 Destination: 128/2, Local: 128.0.0.6, Broadcast: 191.255.255.255  
 Destination: 128/2, Local: 128.0.130.2, Broadcast: 191.255.255.255

Logical interface IC-WS001:bme0.2 (Index 6) (SNMP ifIndex 1208484092)

Flags: Encapsulation: ENET2  
 Input packets : 180408  
 Output packets: 23051  
 Protocol inet, MTU: 1486  
 Destination: 128/8, Local: 128.0.0.6, Broadcast: 128.255.255.255  
 Destination: 128/8, Local: 128.0.130.2, Broadcast: 128.255.255.255  
 Destination: 169.254/16, Local: 169.254.128.6, Broadcast: 169.254.255.255  
 Destination: 169.254/16, Local: 169.254.193.1, Broadcast: 169.254.255.255

Physical interface: IC-WS001:bme1, Enabled, Physical link is Up

Interface index: 49156, SNMP ifIndex: 1208483949  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps  
 Device flags : Present Running

```

Interface flags: SNMP-Traps
Link type : Full-Duplex
Current address: 00:0d:0c:0f:00:03, Hardware address: 00:0d:0c:0f:00:03
Last flapped : 1970-01-01 00:00:01 UTC (2238w5d 22:25 ago)
Statistics last cleared: Never
 Input packets : 168885
 Output packets: 184712
Input errors: 0, Output errors: 0

```

```

Logical interface IC-WS001:bme1.0 (Index 3) (SNMP ifIndex 1208483950)
Flags: Encapsulation: ENET2
Input packets : 168885
Output packets: 184712
Protocol inet, MTU: 1500
 Destination: 128/2, Local: 128.0.0.1, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.5, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.16, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.17, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.24, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.25, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.26, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.28, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.29, Broadcast: 191.255.255.255
 Destination: 128/2, Local: 128.0.0.31, Broadcast: 191.255.255.255
Protocol tnp, MTU: 1500
Local: 0x5

```

```

Physical interface: IC-WS001:dcfabric, Enabled, Physical link is Up
Interface index: 27, SNMP ifIndex: 1208484093
Type: Ethernet, Link-level type: Ethernet, MTU: 1572
Device flags : Present Running
Interface flags: SNMP-Traps
Current address: 00:0b:ca:fe:00:01, Hardware address: 00:0b:ca:fe:00:01
Last flapped : Never
Statistics last cleared: Never
 Input packets : 0
 Output packets: 0
Input errors: 0, Output errors: 0

```

```

Logical interface IC-WS001:dcfabric.0 (Index 64) (SNMP ifIndex 1208484094)
Flags: SNMP-Traps Encapsulation: ENET2
Input packets : 0
Output packets: 0
Protocol inet, MTU: 1558
Protocol mpls, MTU: 1546, Maximum labels: 3
Protocol eth-switch, MTU: 0

```

```

Physical interface: IC-WS001:pme0, Enabled, Physical link is Up
Interface index: 66, SNMP ifIndex: 1208484104
Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Speed: 1000mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Current address: 00:23:9c:f1:a2:e6, Hardware address: 00:23:9c:f1:a2:e6
Last flapped : Never
Statistics last cleared: Never
 Input packets : 1007238
 Output packets: 63383
Input errors: 0, Output errors: 0

```

```

Physical interface: IC-WS001:pme1, Enabled, Physical link is Up

```

Interface index: 67, SNMP ifIndex: 1208484105  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Speed: 1000mbps  
 Device flags : Present Running  
 Interface flags: SNMP-Traps  
 Link type : Full-Duplex  
 Current address: 00:23:9c:f1:a2:e7, Hardware address: 00:23:9c:f1:a2:e7  
 Last flapped : Never  
 Statistics last cleared: Never  
     Input packets : 1007118  
     Output packets: 55381  
 Input errors: 0, Output errors: 0

Physical interface: IC-WS001:pme2, Enabled, Physical link is Down  
 Interface index: 68, SNMP ifIndex: 1208484106  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Speed: 1000mbps  
 Device flags : Present Running  
 Interface flags: SNMP-Traps  
 Link type : Full-Duplex  
 Current address: 00:23:9c:f1:a2:e8, Hardware address: 00:23:9c:f1:a2:e8  
 Last flapped : 2012-11-27 02:52:03 UTC (19:33:54 ago)  
 Statistics last cleared: Never  
     Input packets : 0  
     Output packets: 0  
 Input errors: 0, Output errors: 0

Physical interface: IC-WS001:pme3, Enabled, Physical link is Down  
 Interface index: 69, SNMP ifIndex: 1208484107  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Speed: 1000mbps  
 Device flags : Present Running  
 Interface flags: SNMP-Traps  
 Link type : Full-Duplex  
 Current address: 00:23:9c:f1:a2:e9, Hardware address: 00:23:9c:f1:a2:e9  
 Last flapped : 2012-11-27 02:52:03 UTC (19:33:54 ago)  
 Statistics last cleared: Never  
     Input packets : 0  
     Output packets: 0  
 Input errors: 0, Output errors: 0

Physical interface: IC-WS001:vcp0, Enabled, Physical link is Up  
 Interface index: 74, SNMP ifIndex: 1208484372  
 Type: Ethernet, Link-level type: 70, MTU: 1514, Speed: 1000mbps  
 Device flags : Present Running  
 Link type : Full-Duplex  
 Current address: 00:23:9c:f1:a2:e3, Hardware address: 00:23:9c:f1:a2:e3  
 Last flapped : Never  
 Statistics last cleared: Never  
     Input packets : 121842  
     Output packets: 3548  
 Input errors: 0, Output errors: 0

Logical interface IC-WS001:vcp0.32769 (Index 11) (SNMP ifIndex 1208484376)  
 Flags: LinkAddress 0-0 Encapsulation: ENET2  
 Input packets : 13044  
 Output packets: 3548

Physical interface: IC-WS001:vcp1, Enabled, Physical link is Up  
 Interface index: 70, SNMP ifIndex: 1208484108  
 Type: Ethernet, Link-level type: 70, MTU: 1492, Speed: 1000mbps  
 Device flags : Present Running  
 Link type : Full-Duplex  
 Current address: 00:23:9c:f1:a2:e6, Hardware address: 00:23:9c:f1:a2:e6

```
Last flapped : Never
Statistics last cleared: Never
 Input packets : 767413
 Output packets: 46503
Input errors: 0, Output errors: 0

Logical interface IC-WS001:vcp1.32768 (Index 7) (SNMP ifIndex 1208484109)
 Flags: LinkAddress 0-0 Encapsulation: ENET2
 Input packets : 735889
 Output packets: 46503

Physical interface: IC-WS001:vcp2, Enabled, Physical link is Up
Interface index: 71, SNMP ifIndex: 1208484369
Type: Ethernet, Link-level type: 70, MTU: 1492, Speed: 1000mbps
Device flags : Present Running
Link type : Full-Duplex
Current address: 00:23:9c:f1:a2:e7, Hardware address: 00:23:9c:f1:a2:e7
Last flapped : Never
Statistics last cleared: Never
 Input packets : 831710
 Output packets: 44548
Input errors: 0, Output errors: 0

Logical interface IC-WS001:vcp2.32768 (Index 8) (SNMP ifIndex 1208484373)
 Flags: LinkAddress 0-0 Encapsulation: ENET2
 Input packets : 737844
 Output packets: 44548

Physical interface: IC-WS001:vcp3, Enabled, Physical link is Down
Interface index: 72, SNMP ifIndex: 1208484370
Type: Ethernet, Link-level type: 70, MTU: 1492, Speed: 1000mbps
Device flags : Present Running
Link type : Full-Duplex
Current address: 00:23:9c:f1:a2:e8, Hardware address: 00:23:9c:f1:a2:e8
Last flapped : 2012-11-27 20:31:36 UTC (01:54:21 ago)
Statistics last cleared: Never
 Input packets : 0
 Output packets: 0
Input errors: 0, Output errors: 0

Logical interface IC-WS001:vcp3.32768 (Index 9) (SNMP ifIndex 1208484374)
 Flags: LinkAddress 0-0 Encapsulation: ENET2
 Input packets : 0
 Output packets: 0

Physical interface: IC-WS001:vcp4, Enabled, Physical link is Down
Interface index: 73, SNMP ifIndex: 1208484371
Type: Ethernet, Link-level type: 70, MTU: 1492, Speed: 1000mbps
Device flags : Present Running
Link type : Full-Duplex
Current address: 00:23:9c:f1:a2:e9, Hardware address: 00:23:9c:f1:a2:e9
Last flapped : 2012-11-27 20:31:36 UTC (01:54:21 ago)
Statistics last cleared: Never
 Input packets : 0
 Output packets: 0
Input errors: 0, Output errors: 0

Logical interface IC-WS001:vcp4.32768 (Index 10) (SNMP ifIndex 1208484375)
 Flags: LinkAddress 0-0 Encapsulation: ENET2
 Input packets : 0
 Output packets: 0
```

**show interfaces statistics fabric brief**

```
user@switch> show interfaces statistics fabric brief
Physical interface: IC-WS001:fte-0/0/0, Enabled, Physical link is Down
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/0.32768
 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2
 eth-switch

Physical interface: IC-WS001:fte-0/0/4, Enabled, Physical link is Down
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/4.32768
 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2
 eth-switch

Physical interface: IC-WS001:fte-0/0/6, Enabled, Physical link is Down
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/6.32768
 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2
 eth-switch

Physical interface: IC-WS001:fte-0/0/13, Enabled, Physical link is Down
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/13.32768
 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2
 eth-switch

Physical interface: IC-WS001:fte-0/0/15, Enabled, Physical link is Down
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-0/0/15.32768
 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2
 eth-switch

Physical interface: IC-WS001:fte-1/0/2, Enabled, Physical link is Down
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-1/0/2.32768
 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2
```



## eth-switch

Physical interface: IC-WS001:fte-1/0/7, Enabled, Physical link is Down  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-1/0/7.32768  
 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2  
 eth-switch

Physical interface: IC-WS001:fte-1/0/10, Enabled, Physical link is Down  
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex,  
 Loopback: Disabled, Source filtering: Disabled, Flow control: Disabled  
 Device flags : Present Running  
 Interface flags: SNMP-Traps Internal: 0x0

Logical interface IC-WS001:fte-1/0/10.32768  
 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2  
 eth-switch

Physical interface: IC-WS001:bme0, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1500, Clocking: Unspecified,  
 Speed: Unspecified  
 Device flags : Present Running

Logical interface IC-WS001:bme0.0  
 Flags: LinkAddress 0-0 Encapsulation: ENET2  
 inet 128.0.32.0 --> 0/0

Logical interface IC-WS001:bme0.1  
 Flags: LinkAddress 0-0 Encapsulation: ENET2  
 inet 128.0.0.6/2  
 128.0.130.2/2

Logical interface IC-WS001:bme0.2  
 Flags: Encapsulation: ENET2  
 inet 128.0.0.6/8  
 128.0.130.2/8  
 169.254.128.6/16  
 169.254.193.1/16

Physical interface: IC-WS001:bme1, Enabled, Physical link is Up  
 Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,  
 Speed: 1000mbps  
 Device flags : Present Running  
 Interface flags: SNMP-Traps

Logical interface IC-WS001:bme1.0  
 Flags: Encapsulation: ENET2  
 inet 128.0.0.1/2  
 128.0.0.5/2  
 128.0.0.16/2  
 128.0.0.17/2  
 128.0.0.24/2  
 128.0.0.25/2  
 128.0.0.26/2  
 128.0.0.28/2  
 128.0.0.29/2  
 128.0.0.31/2

tnp 0x5

Physical interface: IC-WS001:dcfabric, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: Ethernet, MTU: 1572, Clocking: Unspecified,  
Speed: Unspecified  
Device flags : Present Running  
Interface flags: SNMP-Traps

Logical interface IC-WS001:dcfabric.0  
Flags: SNMP-Traps Encapsulation: ENET2  
inet  
mpls  
eth-switch

Physical interface: IC-WS001:pme0, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Clocking: Unspecified,  
Speed: 1000mbps  
Device flags : Present Running  
Interface flags: SNMP-Traps

Physical interface: IC-WS001:pme1, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Clocking: Unspecified,  
Speed: 1000mbps  
Device flags : Present Running  
Interface flags: SNMP-Traps

Physical interface: IC-WS001:pme2, Enabled, Physical link is Down  
Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Clocking: Unspecified,  
Speed: 1000mbps  
Device flags : Present Running  
Interface flags: SNMP-Traps

Physical interface: IC-WS001:pme3, Enabled, Physical link is Down  
Type: Ethernet, Link-level type: Ethernet, MTU: 1510, Clocking: Unspecified,  
Speed: 1000mbps  
Device flags : Present Running  
Interface flags: SNMP-Traps

Physical interface: IC-WS001:vcp0, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: 70, MTU: 1514, Clocking: Unspecified, Speed:  
1000mbps  
Device flags : Present Running

Logical interface IC-WS001:vcp0.32769  
Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: IC-WS001:vcp1, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: 70, MTU: 1492, Clocking: Unspecified, Speed:  
1000mbps  
Device flags : Present Running

Logical interface IC-WS001:vcp1.32768  
Flags: LinkAddress 0-0 Encapsulation: ENET2

Physical interface: IC-WS001:vcp2, Enabled, Physical link is Up  
Type: Ethernet, Link-level type: 70, MTU: 1492, Clocking: Unspecified, Speed:  
1000mbps  
Device flags : Present Running

Logical interface IC-WS001:vcp2.32768  
Flags: LinkAddress 0-0 Encapsulation: ENET2

```

Physical interface: IC-WS001:vcp3, Enabled, Physical link is Down
 Type: Ethernet, Link-level type: 70, MTU: 1492, Clocking: Unspecified, Speed:
1000mbps
 Device flags : Present Running

Logical interface IC-WS001:vcp3.32768
 Flags: Device-Down LinkAddress 0-0 Encapsulation: ENET2

Physical interface: IC-WS001:vcp4, Enabled, Physical link is Down
 Type: Ethernet, Link-level type: 70, MTU: 1492, Clocking: Unspecified, Speed:
1000mbps
 Device flags : Present Running

Logical interface IC-WS001:vcp4.32768
 Flags: Device-Down LinkAddress 0-0 Encapsulation: ENET2

```

### show interfaces statistics fabric detail

```

user@switch> show interfaces statistics fabric detail
show interfaces statistics fabric detail
Physical interface: IC-WS001:fte-0/0/0, Enabled, Physical link is Down
 Interface index: 49174, SNMP ifIndex: 1208484473, Generation: 153
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU
Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 CoS queues : 12 supported, 12 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 00:00:00:00:00:00, Hardware address: 00:00:00:00:00:00
 Last flapped : 2012-11-27 20:30:30 UTC (02:04:59 ago)
 Statistics last cleared: Never
Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets : 0 0 pps
 Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets : 0
 Output packets: 0
Input errors:
 Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
Resource errors: 0
Output errors:
 Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 12 supported, 5 in use
Queue counters: Queued packets Transmitted packets Dropped packets

 0 fabric_fcset 0 0 0
 1 fabric_fcset 0 0 0
 2 fabric_fcset 0 0 0
 3 fabric_fcset 0 0 0

```

|    |              |   |   |   |
|----|--------------|---|---|---|
| 4  | fabric_fcset | 0 | 0 | 0 |
| 5  | fabric_fcset | 0 | 0 | 0 |
| 6  | fabric_fcset | 0 | 0 | 0 |
| 7  | fabric_fcset | 0 | 0 | 0 |
| 8  | fabric_fcset | 0 | 0 | 0 |
| 9  | fabric_fcset | 0 | 0 | 0 |
| 10 | fabric_fcset | 0 | 0 |   |
| 0  |              |   |   |   |
| 11 | fabric_fcset | 0 | 0 |   |
| 0  |              |   |   |   |

Logical interface IC-WS001:fte-0/0/0.32768 (Index 83) (SNMP ifIndex 1208484474)  
(Generation 148)

Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2

Traffic statistics:

|                 |   |
|-----------------|---|
| Input bytes :   | 0 |
| Output bytes :  | 0 |
| Input packets:  | 0 |
| Output packets: | 0 |

Local statistics:

|                 |   |
|-----------------|---|
| Input bytes :   | 0 |
| Output bytes :  | 0 |
| Input packets:  | 0 |
| Output packets: | 0 |

Transit statistics:

|                 |   |       |
|-----------------|---|-------|
| Input bytes :   | 0 | 0 bps |
| Output bytes :  | 0 | 0 bps |
| Input packets:  | 0 | 0 pps |
| Output packets: | 0 | 0 pps |

Protocol eth-switch, MTU: 0, Generation: 176, Route table: 0

#### show interfaces statistics fabric terse

```
user@switch> show interfaces statistics fabric terse
```

| Interface                 | Admin | Link | Proto      | Local         | Remote  |
|---------------------------|-------|------|------------|---------------|---------|
| IC-WS001:fte-0/0/0        | up    | down |            |               |         |
| IC-WS001:fte-0/0/0.32768  | up    | down | eth-switch |               |         |
| IC-WS001:fte-0/0/4        | up    | down |            |               |         |
| IC-WS001:fte-0/0/4.32768  | up    | down | eth-switch |               |         |
| IC-WS001:fte-0/0/6        | up    | down |            |               |         |
| IC-WS001:fte-0/0/6.32768  | up    | down | eth-switch |               |         |
| IC-WS001:fte-0/0/13       | up    | down |            |               |         |
| IC-WS001:fte-0/0/13.32768 | up    | down | eth-switch |               |         |
| IC-WS001:fte-0/0/15       | up    | down |            |               |         |
| IC-WS001:fte-0/0/15.32768 | up    | down | eth-switch |               |         |
| IC-WS001:fte-1/0/2        | up    | down |            |               |         |
| IC-WS001:fte-1/0/2.32768  | up    | down | eth-switch |               |         |
| IC-WS001:fte-1/0/7        | up    | down |            |               |         |
| IC-WS001:fte-1/0/7.32768  | up    | down | eth-switch |               |         |
| IC-WS001:fte-1/0/10       | up    | down |            |               |         |
| IC-WS001:fte-1/0/10.32768 | up    | down | eth-switch |               |         |
| IC-WS001:bme0             | up    | up   |            |               |         |
| IC-WS001:bme0.0           | up    | up   | inet       | 128.0.32.0    | --> 0/0 |
| IC-WS001:bme0.1           | up    | up   | inet       | 128.0.0.6/2   |         |
|                           |       |      |            | 128.0.130.2/2 |         |

```

IC-WS001:bme0.2 up up inet 128.0.0.6/8
 128.0.130.2/8
 169.254.128.6/16
 169.254.193.1/16
IC-WS001:bme1 up up
IC-WS001:bme1.0 up up inet 128.0.0.1/2
 128.0.0.5/2
 128.0.0.16/2
 128.0.0.17/2
 128.0.0.24/2
 128.0.0.25/2
 128.0.0.26/2
 128.0.0.28/2
 128.0.0.29/2
 128.0.0.31/2
 tnp 0x5
IC-WS001:dcfabric up up
IC-WS001:dcfabric.0 up up inet
 mpls
 eth-switch
IC-WS001:pme0 up up
IC-WS001:pme1 up up
IC-WS001:pme2 up down
IC-WS001:pme3 up down
IC-WS001:vcp0 up up
IC-WS001:vcp0.32769 up up
IC-WS001:vcp1 up up
IC-WS001:vcp1.32768 up up
IC-WS001:vcp2 up up
IC-WS001:vcp2.32768 up up
IC-WS001:vcp3 up down
IC-WS001:vcp3.32768 up down
IC-WS001:vcp4 up down
IC-WS001:vcp4.32768 up down

```

#### show interfaces statistics fabric device-name

```

user@switch> show interfaces statistics fabric IC-WS001:fte-0/0/13
Physical interface: IC-WS001:fte-0/0/13, Enabled, Physical link is Down
 Interface index: 49177, SNMP ifIndex: 1208484479
 Link-level type: Ethernet, MTU: 9232, Speed: 40Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled, Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 CoS queues : 12 supported, 12 maximum usable queues
 Current address: 00:00:00:00:00:0d, Hardware address: 00:00:00:00:00:0d
 Last flapped : 2012-11-27 20:30:30 UTC (02:09:53 ago)
 Statistics last cleared: Never
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)
 Input errors: 0, Output errors: 0

Logical interface IC-WS001:fte-0/0/13.32768 (Index 86) (SNMP ifIndex 1208484480)

 Flags: Device-Down SNMP-Traps 0x0 Encapsulation: ENET2
 Input packets : 0
 Output packets: 0
 Protocol eth-switch, MTU: 0

```

## show interfaces queue fabric

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show interfaces queue fabric<br><egress><br><forwarding-class <i>forwarding-class</i> ><br><interface-name <i>interface-name</i> >                                                                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b>      | Command introduced in Junos OS Release 12.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | Display class-of-service (CoS) queue information for the fabric interfaces that are configured between Node devices and Interconnect devices.                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <p><b>none</b>—Show detailed CoS queue statistics for all physical interfaces.</p> <p><b>egress</b>—(Optional) Display egress queue statistics.</p> <p><b>forwarding-class <i>forwarding-class</i></b>—(Optional) Forwarding class name for this queue. Show detailed CoS statistics for the queue associated with the specified forwarding class.</p> <p><b>interface-name <i>interface-name</i></b>—(Optional) Show detailed CoS queue statistics for the specified interface.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">show interfaces fabric on page 303</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                               |
| <b>List of Sample Output</b>    | <a href="#">show interfaces queue fabric on page 343</a><br><a href="#">show interfaces queue fabric egress on page 352</a><br><a href="#">show interfaces queue fabric interface-name egress on page 362</a><br><a href="#">show interfaces queue fabric interface-name egress forwarding-class forwarding-class-name on page 363</a>                                                                                                                                               |
| <b>Output Fields</b>            | Table 27 on page 249 lists the output fields for the <b>show interfaces queue fabric</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                            |

Table 32: show interfaces queue fabric Output Fields

| Field Name         | Field Description               |
|--------------------|---------------------------------|
| Physical interface | Name of the physical interface. |

Table 32: show interfaces queue fabric Output Fields (*continued*)

| Field Name                | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enabled</b>            | State of the interface. Possible values are: <ul style="list-style-type: none"> <li>Administratively down, Physical link is Down—The interface is turned off, and the physical link is inoperable.</li> <li>Administratively down, Physical link is Up—The interface is turned off, but the physical link is operational and can pass packets when it is enabled.</li> <li>Enabled, Physical link is Down—The interface is turned on, but the physical link is inoperable and cannot pass packets.</li> <li>Enabled, Physical link is Up—The interface is turned on, and the physical link is operational and can pass packets.</li> </ul> |
| <b>Interface index</b>    | Physical interface's index number, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>SNMP ifIndex</b>       | SNMP index number for the physical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Forwarding classes</b> | Number of forwarding classes supported and in use for the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Egress queues</b>      | Number of output queues supported and in use on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Queue</b>              | CoS queue number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Transmitted</b>        | Number of packets and bytes transmitted by this queue. Information on transmitted packets and bytes can include: <ul style="list-style-type: none"> <li>Packets—Number of packets transmitted.</li> <li>Bytes—Number of bytes transmitted.</li> <li>Tail-dropped packets—Number of arriving packets dropped because output queue buffers were full.</li> <li>Total-dropped pkts—Number of transmitted packets dropped.</li> <li>Total dropped bytes—Number of transmitted bytes dropped.</li> </ul>                                                                                                                                        |
| <b>Queued</b>             | Number of packets and bytes queued to this queue. <ul style="list-style-type: none"> <li>Packets—Number of packets queued.</li> <li>Bytes—Number of bytes queued.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## Sample Output

### show interfaces queue fabric

```

user@switch> show interfaces queue fabric
Physical interface: IC-WS001:fte-0/0/15, Enabled, Physical link is Up
 Interface index: 49178, SNMP ifIndex: 1208484475
Forwarding classes: 16 supported, 5 in use
Egress queues: 12 supported, 5 in use
Queue: 0, Forwarding classes: fabric_fcset_be
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 62665971 0 pps

```

```

Bytes : 7770580404 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: fabric_fcset_noloss1
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: fabric_fcset_noloss2
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fabric_fcset_noloss3
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: fabric_fcset_noloss4
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 5, Forwarding classes: fabric_fcset_noloss5
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: fabric_fcset_noloss6
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps

```



```

Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: fabric_fcset_strict_high
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: fabric_fcset_mcast1
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 9, Forwarding classes: fabric_fcset_mcast2
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 10, Forwarding classes: fabric_fcset_mcast3
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 11, Forwarding classes: fabric_fcset_mcast4
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

Physical interface: IC-WS001:fte-1/0/2, Enabled, Physical link is Up
Interface index: 49211, SNMP ifIndex: 1208484377
Forwarding classes: 16 supported, 5 in use
Egress queues: 12 supported, 5 in use
Queue: 0, Forwarding classes: fabric_fcset_be
Queued:
 Packets : 0 0 pps

```

```

 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: fabric_fcset_noloss1
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: fabric_fcset_noloss2
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fabric_fcset_noloss3
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: fabric_fcset_noloss4
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 5, Forwarding classes: fabric_fcset_noloss5
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: fabric_fcset_noloss6
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps

```

```

Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: fabric_fcset_strict_high
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: fabric_fcset_mcast1
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 9, Forwarding classes: fabric_fcset_mcast2
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 10, Forwarding classes: fabric_fcset_mcast3
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 11, Forwarding classes: fabric_fcset_mcast4
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps

Physical interface: IC-WS001:fte-1/0/7, Enabled, Physical link is Up
Interface index: 49212, SNMP ifIndex: 1208484365
Forwarding classes: 16 supported, 5 in use
Egress queues: 12 supported, 5 in use

```

```

Queue: 0, Forwarding classes: fabric_fcset_be
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: fabric_fcset_noloss1
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: fabric_fcset_noloss2
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fabric_fcset_noloss3
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: fabric_fcset_noloss4
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 5, Forwarding classes: fabric_fcset_noloss5
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: fabric_fcset_noloss6

```

```

Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: fabric_fcset_strict_high
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: fabric_fcset_mcast1
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 9, Forwarding classes: fabric_fcset_mcast2
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 10, Forwarding classes: fabric_fcset_mcast3
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 11, Forwarding classes: fabric_fcset_mcast4
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

```

Physical interface: IC-WS001:fte-1/0/10, Enabled, Physical link is Up

```

Interface index: 49213, SNMP ifIndex: 1208484625
Forwarding classes: 16 supported, 5 in use
Egress queues: 12 supported, 5 in use
Queue: 0, Forwarding classes: fabric_fcset_be
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: fabric_fcset_noloss1
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: fabric_fcset_noloss2
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fabric_fcset_noloss3
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: fabric_fcset_noloss4
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 5, Forwarding classes: fabric_fcset_noloss5
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available

```

```

Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: fabric_fcset_noloss6
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: fabric_fcset_strict_high
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: fabric_fcset_mcast1
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 9, Forwarding classes: fabric_fcset_mcast2
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 10, Forwarding classes: fabric_fcset_mcast3
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 11, Forwarding classes: fabric_fcset_mcast4
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps

```

```

Total-dropped bytes : 0 0 bps

Physical interface: P2659-C:fte-0/1/2, Enabled, Physical link is Up
Interface index: 49161, SNMP ifIndex: 1209008630
Forwarding classes: 16 supported, 5 in use
Egress queues: 12 supported, 5 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fcoe
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: no-loss
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: network-control
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: mcast
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps

```

#### show interfaces queue fabric egress

```
user@switch> show interfaces queue fabric egress
```



```

Physical interface: IC-WS001:fte-0/0/15, Enabled, Physical link is Up
Interface index: 49178, SNMP ifIndex: 1208484475
Forwarding classes: 16 supported, 5 in use
Egress queues: 12 supported, 5 in use
Queue: 0, Forwarding classes: fabric_fcset_be
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 62665971 0 pps
 Bytes : 7770580404 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: fabric_fcset_noloss1
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: fabric_fcset_noloss2
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fabric_fcset_noloss3
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: fabric_fcset_noloss4
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 5, Forwarding classes: fabric_fcset_noloss5
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps

```

```

Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: fabric_fcset_noloss6
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: fabric_fcset_strict_high
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: fabric_fcset_mcast1
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 9, Forwarding classes: fabric_fcset_mcast2
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 10, Forwarding classes: fabric_fcset_mcast3
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 11, Forwarding classes: fabric_fcset_mcast4
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Tail-dropped packets : Not Available

```

```

Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

Physical interface: IC-WS001:fte-1/0/2, Enabled, Physical link is Up
Interface index: 49211, SNMP ifIndex: 1208484377
Forwarding classes: 16 supported, 5 in use
Egress queues: 12 supported, 5 in use
Queue: 0, Forwarding classes: fabric_fcset_be
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 1, Forwarding classes: fabric_fcset_noloss1
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 2, Forwarding classes: fabric_fcset_noloss2
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fabric_fcset_noloss3
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: fabric_fcset_noloss4
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 5, Forwarding classes: fabric_fcset_noloss5
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps

```

```

Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: fabric_fcset_noloss6
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: fabric_fcset_strict_high
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: fabric_fcset_mcast1
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 9, Forwarding classes: fabric_fcset_mcast2
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 10, Forwarding classes: fabric_fcset_mcast3
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 11, Forwarding classes: fabric_fcset_mcast4
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:

```

|                      |   |               |       |
|----------------------|---|---------------|-------|
| Packets              | : | 0             | 0 pps |
| Bytes                | : | 0             | 0 bps |
| Tail-dropped packets | : | Not Available |       |
| Total-dropped pkts   | : | 0             | 0 pps |
| Total-dropped bytes  | : | 0             | 0 bps |

Physical interface: IC-WS001:fte-1/0/7, Enabled, Physical link is Up

Interface index: 49212, SNMP ifIndex: 1208484365

Forwarding classes: 16 supported, 5 in use

Egress queues: 12 supported, 5 in use

Queue: 0, Forwarding classes: fabric\_fcset\_be

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |               |       |
|----------------------|---|---------------|-------|
| Packets              | : | 0             | 0 pps |
| Bytes                | : | 0             | 0 bps |
| Tail-dropped packets | : | Not Available |       |
| Total-dropped pkts   | : | 0             | 0 pps |
| Total-dropped bytes  | : | 0             | 0 bps |

Queue: 1, Forwarding classes: fabric\_fcset\_noloss1

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |               |       |
|----------------------|---|---------------|-------|
| Packets              | : | 0             | 0 pps |
| Bytes                | : | 0             | 0 bps |
| Tail-dropped packets | : | Not Available |       |
| Total-dropped pkts   | : | 0             | 0 pps |
| Total-dropped bytes  | : | 0             | 0 bps |

Queue: 2, Forwarding classes: fabric\_fcset\_noloss2

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |               |       |
|----------------------|---|---------------|-------|
| Packets              | : | 0             | 0 pps |
| Bytes                | : | 0             | 0 bps |
| Tail-dropped packets | : | Not Available |       |
| Total-dropped pkts   | : | 0             | 0 pps |
| Total-dropped bytes  | : | 0             | 0 bps |

Queue: 3, Forwarding classes: fabric\_fcset\_noloss3

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |               |       |
|----------------------|---|---------------|-------|
| Packets              | : | 0             | 0 pps |
| Bytes                | : | 0             | 0 bps |
| Tail-dropped packets | : | Not Available |       |
| Total-dropped pkts   | : | 0             | 0 pps |
| Total-dropped bytes  | : | 0             | 0 bps |

Queue: 4, Forwarding classes: fabric\_fcset\_noloss4

Queued:

|         |   |   |       |
|---------|---|---|-------|
| Packets | : | 0 | 0 pps |
| Bytes   | : | 0 | 0 bps |

Transmitted:

|                      |   |               |       |
|----------------------|---|---------------|-------|
| Packets              | : | 0             | 0 pps |
| Bytes                | : | 0             | 0 bps |
| Tail-dropped packets | : | Not Available |       |
| Total-dropped pkts   | : | 0             | 0 pps |
| Total-dropped bytes  | : | 0             | 0 bps |

Queue: 5, Forwarding classes: fabric\_fcset\_noloss5

```

Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: fabric_fcset_noloss6
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: fabric_fcset_strict_high
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: fabric_fcset_mcast1
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 9, Forwarding classes: fabric_fcset_mcast2
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 10, Forwarding classes: fabric_fcset_mcast3
Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 11, Forwarding classes: fabric_fcset_mcast4
Queued:

```

```

Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

```

Physical interface: IC-WS001:fte-1/0/10, Enabled, Physical link is Up

Interface index: 49213, SNMP ifIndex: 1208484625

Forwarding classes: 16 supported, 5 in use

Egress queues: 12 supported, 5 in use

Queue: 0, Forwarding classes: fabric\_fcset\_be

```

Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

```

Queue: 1, Forwarding classes: fabric\_fcset\_noloss1

```

Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

```

Queue: 2, Forwarding classes: fabric\_fcset\_noloss2

```

Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

```

Queue: 3, Forwarding classes: fabric\_fcset\_noloss3

```

Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

```

Queue: 4, Forwarding classes: fabric\_fcset\_noloss4

```

Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available

```

```

Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 5, Forwarding classes: fabric_fcset_noloss5
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 6, Forwarding classes: fabric_fcset_noloss6
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: fabric_fcset_strict_high
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: fabric_fcset_mcast1
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 9, Forwarding classes: fabric_fcset_mcast2
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps
Queue: 10, Forwarding classes: fabric_fcset_mcast3
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 0 0 pps
Bytes : 0 0 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps

```



```

 Total-dropped bytes : 0 0 bps
Queue: 11, Forwarding classes: fabric_fcset_mcast4
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps

```

Physical interface: P2659-C:fte-0/1/2, Enabled, Physical link is Up

Interface index: 49161, SNMP ifIndex: 1209008630

Forwarding classes: 16 supported, 5 in use

Egress queues: 12 supported, 5 in use

Queue: 0, Forwarding classes: best-effort

```

 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps

```

Queue: 3, Forwarding classes: fcoe

```

 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps

```

Queue: 4, Forwarding classes: no-loss

```

 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps

```

Queue: 7, Forwarding classes: network-control

```

 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps

```

Queue: 8, Forwarding classes: mcast

```

 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:

```

|                      |   |               |       |
|----------------------|---|---------------|-------|
| Packets              | : | 0             | 0 pps |
| Bytes                | : | 0             | 0 bps |
| Tail-dropped packets | : | Not Available |       |
| Total-dropped pkts   | : | 0             | 0 pps |
| Total-dropped bytes  | : | 0             | 0 bps |

#### show interfaces queue fabric interface-name egress

```

user@switch> show interfaces queue fabric BBAK0394:fte-0/1/0 egress
Physical interface: BBAK0394:fte-0/1/0, Enabled, Physical link is Up
Interface index: 129, SNMP ifIndex: 1091568120 Forwarding classes: 16 supported,
5 in use Egress queues: 12 supported, 5 in use
Queue: 0, Forwarding classes: best-effort
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 74777763341 844587 pps
 Bytes : 9272442654284 837830728 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 3, Forwarding classes: fcoe
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 4, Forwarding classes: no-loss
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 7, Forwarding classes: network-control
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps
 Total-dropped bytes : 0 0 bps
Queue: 8, Forwarding classes: mcast
 Queued:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Transmitted:
 Packets : 0 0 pps
 Bytes : 0 0 bps
 Tail-dropped packets : Not Available
 Total-dropped pkts : 0 0 pps

```

Total-dropped bytes : 0 0 bps

#### show interfaces queue fabric interface-name egress forwarding-class forwarding-class-name

```

user@switch> show interfaces queue fabric BBAK0394:fte-0/1/0 egress forwarding-class
best-effort
Physical interface: BBAK0394:fte-0/1/0, Enabled, Physical link is Up
Interface index: 129, SNMP ifIndex: 1091568120 Forwarding classes: 16 supported,
5 in use Egress queues: 12 supported, 5 in use
Queue: 0, Forwarding classes: best-effort
Queued:
Packets : 0 0 pps
Bytes : 0 0 bps
Transmitted:
Packets : 74793424543 844612 pps
Bytes : 9274384643332 837855936 bps
Tail-dropped packets : Not Available
Total-dropped pkts : 0 0 pps
Total-dropped bytes : 0 0 bps

```

## show interfaces xle

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>show interfaces <i>device-name:type-fpc/pic/port</i></code><br><code>&lt;brief   detail   extensive   terse&gt;</code><br><code>&lt;descriptions&gt;</code><br><code>&lt;media&gt;</code><br><code>&lt;routing-instance (all   <i>instance-name</i>)&gt;</code><br><code>&lt;snmp-index <i>snmp-index</i>&gt;</code><br><code>&lt;statistics&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | Command introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Display status information about the specified 10-Gigabit Ethernet interface. This command does not display statistics for routed VLAN interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>                  | <p><b><i>device-name:type-fpc/pic/port</i></b>—(QFabric systems only) The device name is either the serial number or the alias of the QFabric system component, such as a Node device, Interconnect device, or QFabric infrastructure. The name must contain a maximum of 128 characters and not contain any colons.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b>descriptions</b>—(Optional) Display interface description strings.</p> <p><b>media</b>—(Optional) Display media-specific information about network interfaces.</p> <p><b>routing-instance (all   <i>instance-name</i>)</b>—(Optional) Display the name of an individual routing instance or display all routing instances.</p> <p><b>snmp-index <i>snmp-index</i></b>—(Optional) Display information for the specified SNMP index of the interface.</p> <p><b>statistics</b>—(Optional) Display static interface statistics.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Monitoring Interface Status and Traffic on page 60</a></li><li>• <a href="#">Troubleshooting Network Interfaces on page 62</a></li><li>• <a href="#">Troubleshooting an Aggregated Ethernet Interface on page 89</a></li><li>• <a href="#">Junos OS Network Interfaces Library for Routing Devices</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>List of Sample Output</b>    | <a href="#">show interfaces on page 372</a><br><a href="#">show interfaces (Asymmetric Flow Control) on page 373</a><br><a href="#">show interfaces brief on page 373</a><br><a href="#">show interfaces detail on page 373</a><br><a href="#">show interfaces detail (Asymmetric Flow Control) on page 375</a><br><a href="#">show interfaces extensive on page 376</a><br><a href="#">show interfaces extensive (Asymmetric Flow Control) on page 378</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

[show interfaces terse on page 380](#)

[show interfaces \(QFabric System\) on page 380](#)

**Output Fields** Table 29 on page 286 lists the output fields for the **show interfaces xe** command. Output fields are listed in the approximate order in which they appear.

**Table 33: show interfaces xe Output Fields**

| Field Name                                                                              | Field Description                                                                                                                                                                             | Level of Output              |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Physical Interface</b>                                                               |                                                                                                                                                                                               |                              |
| <b>Physical interface</b>                                                               | Name of the physical interface.                                                                                                                                                               | All levels                   |
| <b>Enabled</b>                                                                          | State of the interface.                                                                                                                                                                       | All levels                   |
| <b>Interface index</b>                                                                  | Index number of the physical interface, which reflects its initialization sequence.                                                                                                           | <b>detail extensive none</b> |
| <b>SNMP ifIndex</b>                                                                     | SNMP index number for the physical interface.                                                                                                                                                 | <b>detail extensive none</b> |
| <b>Generation</b>                                                                       | Unique number for use by Juniper Networks technical support only.                                                                                                                             | <b>detail extensive</b>      |
| <b>Link-level type</b>                                                                  | Encapsulation being used on the physical interface.                                                                                                                                           | All levels                   |
| <b>MTU</b>                                                                              | Maximum transmission unit size on the physical interface.                                                                                                                                     | All levels                   |
| <b>Speed</b>                                                                            | Speed at which the interface is running.                                                                                                                                                      | All levels                   |
| <b>Duplex</b>                                                                           | Duplex mode of the interface, either <b>Full-Duplex</b> or <b>Half-Duplex</b> .                                                                                                               | All levels                   |
| <b>Loopback</b>                                                                         | Loopback status: <b>Enabled</b> or <b>Disabled</b> . If loopback is enabled, type of loopback: <b>Local</b> or <b>Remote</b> .                                                                | All levels                   |
| <b>Source filtering</b>                                                                 | Source filtering status: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                  | All levels                   |
| <b>LAN-PHY mode</b>                                                                     | 10-Gigabit Ethernet interface operating in Local Area Network Physical Layer Device (LAN PHY) mode. LAN PHY allows 10-Gigabit Ethernet wide area links to use existing Ethernet applications. | All levels                   |
| <b>Unidirectional</b>                                                                   | Unidirectional link mode status for 10-Gigabit Ethernet interface: <b>Enabled</b> or <b>Disabled</b> for parent interface; <b>Rx-only</b> or <b>Tx-only</b> for child interfaces.             | All levels                   |
| <b>Flow control</b>                                                                     | Flow control status: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                      | All levels                   |
| <b>NOTE:</b> This field is only displayed if asymmetric flow control is not configured. |                                                                                                                                                                                               |                              |

Table 33: show interfaces xe Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output              |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Configured-flow-control</b> | <p>Configured flow control for the interface transmit buffers (<b>tx-buffers</b>) and receive buffers (<b>rx-buffers</b>):</p> <ul style="list-style-type: none"> <li><b>tx-buffers</b>—<b>On</b> if the interface is configured to respond to Ethernet PAUSE messages received from the connected peer.<br/><b>Off</b> if the interface is not configured to respond to received PAUSE messages.</li> <li><b>rx-buffers</b>—<b>On</b> if the interface is configured to generate and send Ethernet PAUSE messages to the connected peer.<br/><b>Off</b> if the interface is not configured to generate and send PAUSE messages.</li> </ul> <p><b>NOTE:</b> This field is only displayed if asymmetric flow control is configured.</p> | All levels                   |
| <b>Auto-negotiation</b>        | Autonegotiation status: <b>Enabled</b> or <b>Disabled</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | All levels                   |
| <b>Remote-fault</b>            | <p>Remote fault status:</p> <ul style="list-style-type: none"> <li><b>Online</b>—Autonegotiation is manually configured as online.</li> <li><b>Offline</b>—Autonegotiation is manually configured as offline.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | All levels                   |
| <b>Device flags</b>            | Information about the physical device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All levels                   |
| <b>Interface flags</b>         | Information about the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | All levels                   |
| <b>Link flags</b>              | Information about the link.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | All levels                   |
| <b>Wavelength</b>              | Configured wavelength, in nanometers (nm).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | All levels                   |
| <b>Frequency</b>               | Frequency associated with the configured wavelength, in terahertz (THz).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | All levels                   |
| <b>CoS queues</b>              | Number of CoS queues configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>detail extensive none</b> |
| <b>Schedulers</b>              | Number of CoS schedulers configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>extensive</b>             |
| <b>Hold-times</b>              | Current interface hold-time up and hold-time down, in milliseconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive</b>      |
| <b>Current address</b>         | Configured MAC address.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive none</b> |
| <b>Hardware address</b>        | Hardware MAC address.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive none</b> |
| <b>Last flapped</b>            | Date, time, and how long ago the interface went from down to up. The format is <b>Last flapped: year-month-day hour:minute:second:timezone (hour:minute:second ago)</b> . For example, <b>Last flapped: 2008-01-16 10:52:40 UTC (3d 22:58 ago)</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive none</b> |
| <b>Input Rate</b>              | Input rate in bits per second (bps) and packets per second (pps).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | None specified               |
| <b>Output Rate</b>             | Output rate in bps and pps.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | None specified               |
| <b>Statistics last cleared</b> | Time when the statistics for the interface were last set to zero.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>detail extensive</b>      |

Table 33: show interfaces xe Output Fields (*continued*)

| Field Name                | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Level of Output         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Traffic statistics</b> | <p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul> <p><b>NOTE:</b> The bandwidth bps counter is not enabled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive</b> |
| <b>Input errors</b>       | <p>Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• <b>Errors</b>—Sum of the incoming frame aborts and FCS errors.</li> <li>• <b>Drops</b>—Number of packets dropped by the input queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• <b>Framing errors</b>—Number of packets received with an invalid frame checksum (FCS).</li> <li>• <b>Runts</b>—Number of frames received that are smaller than the runt threshold.</li> <li>• <b>Policed discards</b>—Number of frames that the incoming packet match code discarded because they were not recognized or not of interest. Usually, this field reports protocols that Junos OS does not handle.</li> <li>• <b>L3 incompletes</b>—Number of incoming packets discarded because they failed Layer 3 sanity checks of the header. For example, a frame with less than 20 bytes of available IP header is discarded. L3 incomplete errors can be ignored if you configure the <b>ignore-l3-incompletes</b> statement.</li> <li>• <b>L2 channel errors</b>—Number of times the software did not find a valid logical interface for an incoming frame.</li> <li>• <b>L2 mismatch timeouts</b>—Number of malformed or short packets that caused the incoming packet handler to discard the frame as unreadable.</li> <li>• <b>FIFO errors</b>—Number of FIFO errors in the receive direction that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>Resource errors</b>—Sum of transmit drops.</li> </ul> | <b>extensive</b>        |

Table 33: show interfaces xe Output Fields (*continued*)

| Field Name                      | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Level of Output         |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Output errors</b>            | <p>Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> <li>• <b>Carrier transitions</b>—Number of times the interface has gone from <b>down</b> to <b>up</b>. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the PIC or PIM is malfunctioning.</li> <li>• <b>Errors</b>—Sum of the outgoing frame aborts and FCS errors.</li> <li>• <b>Drops</b>—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.</li> <li>• <b>Collisions</b>—Number of Ethernet collisions. The Gigabit Ethernet PIC supports only full-duplex operation, so for Gigabit Ethernet PICs, this number should always remain 0. If it is nonzero, there is a software bug.</li> <li>• <b>Aged packets</b>—Number of packets that remained in shared packet SDRAM so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly malfunctioning hardware.</li> <li>• <b>FIFO errors</b>—Number of FIFO errors in the send direction as reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>HS link CRC errors</b>—Number of errors on the high-speed links between the ASICs responsible for handling the router interfaces.</li> <li>• <b>MTU errors</b>—Number of packets whose size exceeded the MTU of the interface.</li> <li>• <b>Resource errors</b>—Sum of transmit drops.</li> </ul> | <b>extensive</b>        |
| <b>Egress queues</b>            | Total number of egress queues supported on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail extensive</b> |
| <b>Queue counters (Egress)</b>  | <p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> <li>• <b>Queued packets</b>—Number of queued packets.</li> <li>• <b>Transmitted packets</b>—Number of transmitted packets.</li> <li>• <b>Dropped packets</b>—Number of packets dropped by the ASIC's RED mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail extensive</b> |
| <b>Queue Number</b>             | The CoS queue number and the forwarding classes mapped to the queue number. The <b>Mapped forwarding class</b> column lists the forwarding classes mapped to each CoS queue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive</b> |
| <b>Ingress queues</b>           | Total number of ingress queues supported on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>extensive</b>        |
| <b>Queue counters (Ingress)</b> | <p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> <li>• <b>Queued packets</b>—Number of queued packets.</li> <li>• <b>Transmitted packets</b>—Number of transmitted packets.</li> <li>• <b>Dropped packets</b>—Number of packets dropped by the ASIC's RED mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>extensive</b>        |



Table 33: show interfaces xe Output Fields (*continued*)

| Field Name                              | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Level of Output              |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Active alarms and Active defects</b> | <p>Ethernet-specific defects that can prevent the interface from passing packets. When a defect persists for a certain amount of time, it is promoted to an alarm. Based on the switch configuration, an alarm can ring the red or yellow alarm bell on the switch, or turn on the red or yellow alarm LED on the craft interface. These fields can contain the value <b>None</b> or <b>Link</b>.</p> <ul style="list-style-type: none"> <li>• <b>None</b>—There are no active defects or alarms.</li> <li>• <b>Link</b>—Interface has lost its link state, which usually means that the cable is unplugged, the far-end system has been turned off, or the PIC is malfunctioning.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive none</b> |
| <b>PCS statistics</b>                   | Physical Coding Sublayer (PCS) fault conditions from the LAN PHY device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive</b>      |
| <b>MAC statistics</b>                   | <p>Receive and Transmit statistics reported by the PIC's MAC subsystem.</p> <ul style="list-style-type: none"> <li>• <b>Total octets and total packets</b>—Total number of octets and packets. For Gigabit Ethernet IQ PICs, the received octets count varies by interface type.</li> <li>• <b>Unicast packets, Broadcast packets, and Multicast packets</b>—Number of unicast, broadcast, and multicast packets.</li> <li>• <b>CRC/Align errors</b>—Total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, and had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error).</li> <li>• <b>FIFO error</b>—Number of FIFO errors that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.</li> <li>• <b>MAC control frames</b>—Number of MAC control frames.</li> <li>• <b>MAC pause frames</b>—Number of MAC control frames with <b>pause</b> operational code.</li> <li>• <b>Oversized frames</b>—Number of packets that exceeds the configured MTU.</li> <li>• <b>Jabber frames</b>—Number of frames that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. This definition of jabber is different from the definition in IEEE-802.3 section 8.2.1.5 (10BASE5) and section 10.3.1.4 (10BASE2). These documents define jabber as the condition in which any packet exceeds 20 ms. The allowed range to detect jabber is from 20 ms to 150 ms.</li> <li>• <b>Fragment frames</b>—Total number of packets that were less than 64 octets in length (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. Fragment frames normally increment because both runs (which are normal occurrences caused by collisions) and noise hits are counted.</li> <li>• <b>VLAN tagged frames</b>—Number of frames that are VLAN tagged. The system uses the TPID of 0x8100 in the frame to determine whether a frame is tagged or not. This counter is not supported on EX Series switches and is always displayed as 0.</li> <li>• <b>Code violations</b>—Number of times an event caused the PHY to indicate "Data reception error" or "invalid data symbol error."</li> </ul> | <b>extensive</b>             |
| <b>Filter statistics</b>                | Receive and Transmit statistics reported by the PIC's MAC address filter subsystem.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>extensive</b>             |

Table 33: show interfaces xe Output Fields (*continued*)

| Field Name                  | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Level of Output |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Autonegotiation information | <p>Information about link autonegotiation.</p> <ul style="list-style-type: none"> <li>• <b>Negotiation status:</b> <ul style="list-style-type: none"> <li>• <b>Incomplete</b>—Ethernet interface has the speed or link mode configured.</li> <li>• <b>No autonegotiation</b>—Remote Ethernet interface has the speed or link mode configured, or does not perform autonegotiation.</li> <li>• <b>Complete</b>—Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful.</li> </ul> </li> <li>• <b>Link partner status</b>—OK when the Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful.</li> <li>• <b>Link partner:</b> <ul style="list-style-type: none"> <li>• <b>Link mode</b>—Depending on the capability of the attached Ethernet device, either <b>Full-duplex</b> or <b>Half-duplex</b>.</li> <li>• <b>Flow control</b>—Types of flow control supported by the remote Ethernet device. For Fast Ethernet interfaces, the type is <b>None</b>. For Gigabit Ethernet interfaces, types are <b>Symmetric</b> (link partner supports <b>PAUSE</b> on receive and transmit), <b>Asymmetric</b> (link partner supports <b>PAUSE</b> on transmit), and <b>Symmetric/Asymmetric</b> (link partner supports both <b>PAUSE</b> on receive and transmit or only <b>PAUSE</b> receive).</li> <li>• <b>Remote fault</b>—Remote fault information from the link partner—<b>Failure</b> indicates a receive link error. <b>OK</b> indicates that the link partner is receiving. <b>Negotiation error</b> indicates a negotiation error. <b>Offline</b> indicates that the link partner is going offline.</li> </ul> </li> <li>• <b>Local resolution:</b> <ul style="list-style-type: none"> <li>• <b>Flow control</b>—Types of flow control supported by the remote Ethernet device. For Gigabit Ethernet interfaces, types are <b>Symmetric</b> (link partner supports <b>PAUSE</b> on receive and transmit), <b>Asymmetric</b> (link partner supports <b>PAUSE</b> on transmit), and <b>Symmetric/Asymmetric</b> (link partner supports both <b>PAUSE</b> on receive and transmit or only <b>PAUSE</b> receive). For asymmetric <b>PAUSE</b>, shows if the <b>PAUSE</b> transmit and <b>PAUSE</b> receive states on the interface are <b>enable</b> or <b>disable</b>.</li> <li>• <b>Remote fault</b>—Remote fault information. <b>Link OK</b> (no error detected on receive), <b>Offline</b> (local interface is offline), and <b>Link Failure</b> (link error detected on receive).</li> </ul> </li> </ul> | extensive       |

Table 33: show interfaces xe Output Fields (*continued*)

| Field Name                                    | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Level of Output              |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Packet Forwarding Engine configuration</b> | Information about the configuration of the Packet Forwarding Engine: <ul style="list-style-type: none"> <li><b>Destination slot</b>—FPC slot number.</li> <li><b>CoS transmit queue</b>—Queue number and its associated user-configured forwarding class name.</li> <li><b>Bandwidth %</b>—Percentage of bandwidth allocated to the queue.</li> <li><b>Bandwidth bps</b>—Bandwidth allocated to the queue (in bps).</li> <li><b>Buffer %</b>—Percentage of buffer space allocated to the queue.</li> <li><b>Buffer usec</b>—Amount of buffer space allocated to the queue, in microseconds. This value is nonzero only if the buffer size is configured in terms of time.</li> <li><b>Priority</b>—Queue priority: <b>low</b> or <b>high</b>.</li> <li><b>Limit</b>—Displayed if rate limiting is configured for the queue. Possible values are <b>none</b> and <b>exact</b>. If <b>exact</b> is configured, the queue transmits only up to the configured bandwidth, even if excess bandwidth is available. If <b>none</b> is configured, the queue transmits beyond the configured bandwidth if bandwidth is available.</li> </ul> | <b>extensive</b>             |
| <b>Logical Interface</b>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |
| <b>Logical interface</b>                      | Name of the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | All levels                   |
| <b>Index</b>                                  | Index number of the logical interface, which reflects its initialization sequence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive none</b> |
| <b>SNMP ifIndex</b>                           | SNMP interface index number for the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive none</b> |
| <b>Generation</b>                             | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive</b>      |
| <b>Flags</b>                                  | Information about the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | All levels                   |
| <b>Encapsulation</b>                          | Encapsulation on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | All levels                   |
| <b>Protocol</b>                               | Protocol family.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive none</b> |
| <b>Traffic statistics</b>                     | Number and rate of bytes and packets received (input) and transmitted (output) on the specified interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>detail extensive</b>      |
| <b>IPv6 transit statistics</b>                | If IPv6 statics tracking is enabled, number of IPv6 bytes and packets received and transmitted on the logical interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>extensive</b>             |
| <b>Local statistics</b>                       | Number and rate of bytes and packets destined to and from the switch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>extensive</b>             |
| <b>Transit statistics</b>                     | Number and rate of bytes and packets transiting the switch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>extensive</b>             |
| <b>Generation</b>                             | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive</b>      |
| <b>Route Table</b>                            | Route table in which the logical interface address is located. For example, <b>0</b> refers to the routing table inet.0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>detail extensive none</b> |

Table 33: show interfaces xe Output Fields (*continued*)

| Field Name              | Field Description                                                                                                                                                                                                                                                                                                                                                                                  | Level of Output              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Input Filters</b>    | Names of any input filters applied to this interface.                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive</b>      |
| <b>Output Filters</b>   | Names of any output filters applied to this interface.                                                                                                                                                                                                                                                                                                                                             | <b>detail extensive</b>      |
| <b>Flags</b>            | Information about protocol family flags.<br><br>If unicast Reverse Path Forwarding (uRPF) is explicitly configured on the specified interface, the uRPF flag appears. If uRPF was configured on a different interface (and therefore is enabled on all switch interfaces) but was not explicitly configured on the specified interface, the uRPF flag does not appear even though uRPF is enabled. | <b>detail extensive</b>      |
| <b>Addresses, Flags</b> | Information about the address flags.                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive none</b> |
| <i>protocol-family</i>  | Protocol family configured on the logical interface. If the protocol is <b>inet</b> , the IP address of the interface is also displayed.                                                                                                                                                                                                                                                           | <b>brief</b>                 |
| <b>Flags</b>            | Information about the address flag.                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive none</b> |
| <b>Destination</b>      | IP address of the remote side of the connection.                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive none</b> |
| <b>Local</b>            | IP address of the logical interface.                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive none</b> |
| <b>Broadcast</b>        | Broadcast address of the logical interlace.                                                                                                                                                                                                                                                                                                                                                        | <b>detail extensive none</b> |
| <b>Generation</b>       | Unique number for use by Juniper Networks technical support only.                                                                                                                                                                                                                                                                                                                                  | <b>detail extensive</b>      |

## Sample Output

### show interfaces

```

user@switch> show interfaces xe-0/0/1
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Interface index: 49195, SNMP ifIndex: 591
 Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled,
 Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 12 supported, 12 maximum usable queues
 Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
 Last flapped : 2011-06-01 00:42:03 PDT (00:02:42 ago)
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)
 Active alarms : None
 Active defects : None

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523)
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2
 Input packets : 0

```

```

Output packets: 0
Protocol eth-switch, MTU: 0
Flags: Trunk-Mode

```

### show interfaces (Asymmetric Flow Control)

```

user@switch> show interfaces xe-0/0/1
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Interface index: 49195, SNMP ifIndex: 591
 Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
Disabled,
 Configured-flow-control tx-buffers: off rx-buffers: on
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 12 supported, 12 maximum usable queues
 Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
 Last flapped : 2011-06-01 00:42:03 PDT (00:02:42 ago)
 Input rate : 0 bps (0 pps)
 Output rate : 0 bps (0 pps)
 Active alarms : None
 Active defects : None

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523)
 Flags: SNMP-Traps 0x0 Encapsulation: ENET2
 Input packets : 0
 Output packets: 0
 Protocol eth-switch, MTU: 0
 Flags: Trunk-Mode

```

### show interfaces brief

```

user@switch> show interfaces xe-0/0/1 brief
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps, Loopback: Disabled,
 Source filtering: Disabled, Flow control: Enabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None

Logical interface xe-0/0/1.0
 Flags: SNMP-Traps Encapsulation: ENET2
 eth-switch

```

### show interfaces detail

```

user@switch> show interfaces xe-0/0/1 detail
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Interface index: 49195, SNMP ifIndex: 591, Generation: 169
 Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
Disabled,
 Flow control: Disabled
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 12 supported, 12 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1

```

```

Last flapped : 2011-06-01 00:42:03 PDT (00:02:50 ago)
Statistics last cleared: 2011-06-01 00:44:39 PDT (00:00:14 ago)
Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Egress queues: 12 supported, 9 in use
Queue counters:
 Queued packets Transmitted packets Dropped packets

 0 best-effort 0 0 0
 1 fc7 0 0 0
 2 no-loss 0 0 0
 3 fcoe 0 0 0
 4 fc4 0 0 0
 5 fc5 0 0 0
 6 fc6 0 0 0
 7 network-cont 0 0 0
 8 mcast 0 0 0

Queue number: Mapped forwarding classes
0 best-effort
1 fc7
2 no-loss
3 fcoe
4 fc4
5 fc5
6 fc6
7 network-control
8 mcast
Active alarms : None
Active defects : None

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523) (Generation 143)
Flags: SNMP-Traps 0x0 Encapsulation: ENET2
Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Local statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps

```

```

Input packets: 0 0 pps
Output packets: 0 0 pps
Protocol eth-switch, MTU: 0, Generation: 170, Route table: 0
Flags: Trunk-Mode

```

### show interfaces detail (Asymmetric Flow Control)

```

user@switch> show interfaces xe-0/0/1 detail
Physical interface: xe-0/0/1, Enabled, Physical link is Up
 Interface index: 49195, SNMP ifIndex: 591, Generation: 169
 Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
 Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
 Disabled,
 Configured-flow-control tx-buffers: off rx-buffers: on
 Device flags : Present Running
 Interface flags: SNMP-Traps Internal: 0x0
 Link flags : None
 CoS queues : 12 supported, 12 maximum usable queues
 Hold-times : Up 0 ms, Down 0 ms
 Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
 Last flapped : 2011-06-01 00:42:03 PDT (00:02:50 ago)
 Statistics last cleared: 2011-06-01 00:44:39 PDT (00:00:14 ago)
 Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
 IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
 Egress queues: 12 supported, 9 in use
 Queue counters:
 Queued packets Transmitted packets Dropped packets

 0 best-effort 0 0 0
 1 fc7 0 0 0
 2 no-loss 0 0 0
 3 fcoe 0 0 0
 4 fc4 0 0 0
 5 fc5 0 0 0
 6 fc6 0 0 0
 7 network-cont 0 0 0
 8 mcast 0 0 0

 Queue number: Mapped forwarding classes
 0 best-effort
 1 fc7
 2 no-loss
 3 fcoe
 4 fc4
 5 fc5
 6 fc6

```

```

7 network-control
8 mcast
Active alarms : None
Active defects : None

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523) (Generation 143)
Flags: SNMP-Traps 0x0 Encapsulation: ENET2
Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Local statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
Protocol eth-switch, MTU: 0, Generation: 170, Route table: 0
Flags: Trunk-Mode

```

### show interfaces extensive

```

user@switch> show interfaces xe-0/0/1 extensive
Physical interface: xe-0/0/1, Enabled, Physical link is Up
Interface index: 49195, SNMP ifIndex: 591, Generation: 169
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:
Disabled,
Flow control: Disabled
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x0
Link flags : None
CoS queues : 12 supported, 12 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1
Last flapped : 2011-06-01 00:42:03 PDT (00:03:08 ago)
Statistics last cleared: 2011-06-01 00:44:39 PDT (00:00:32 ago)
Traffic statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
IPv6 transit statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Input errors:
 Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
Resource errors: 0
Output errors:
 Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 12 supported, 9 in use
Queue counters: Queued packets Transmitted packets Dropped packets

```



|                |   |   |   |
|----------------|---|---|---|
| 0 best-effort  | 0 | 0 | 0 |
| 1 fc7          | 0 | 0 | 0 |
| 2 no-loss      | 0 | 0 | 0 |
| 3 fcoe         | 0 | 0 | 0 |
| 4 fc4          | 0 | 0 | 0 |
| 5 fc5          | 0 | 0 | 0 |
| 6 fc6          | 0 | 0 | 0 |
| 7 network-cont | 0 | 0 | 0 |
| 8 mcast        | 0 | 0 | 0 |

Queue number:            Mapped forwarding classes

|   |                 |
|---|-----------------|
| 0 | best-effort     |
| 1 | fc7             |
| 2 | no-loss         |
| 3 | fcoe            |
| 4 | fc4             |
| 5 | fc5             |
| 6 | fc6             |
| 7 | network-control |
| 8 | mcast           |

Active alarms : None

Active defects : None

MAC statistics:

|                    | Receive | Transmit |
|--------------------|---------|----------|
| Total octets       | 0       | 0        |
| Total packets      | 0       | 0        |
| Unicast packets    | 0       | 0        |
| Broadcast packets  | 0       | 0        |
| Multicast packets  | 0       | 0        |
| CRC/Align errors   | 0       | 0        |
| FIFO errors        | 0       | 0        |
| MAC control frames | 0       | 0        |
| MAC pause frames   | 0       | 0        |
| Oversized frames   | 0       |          |
| Jabber frames      | 0       |          |
| Fragment frames    | 0       |          |
| VLAN tagged frames | 0       |          |
| Code violations    | 0       |          |

MAC Priority Flow Control Statistics:

|              |   |   |
|--------------|---|---|
| Priority : 0 | 0 | 0 |
| Priority : 1 | 0 | 0 |
| Priority : 2 | 0 | 0 |
| Priority : 3 | 0 | 0 |
| Priority : 4 | 0 | 0 |
| Priority : 5 | 0 | 0 |
| Priority : 6 | 0 | 0 |
| Priority : 7 | 0 | 0 |

Filter statistics:

|                      |   |   |
|----------------------|---|---|
| Input packet count   | 0 |   |
| Input packet rejects | 0 |   |
| Input DA rejects     | 0 |   |
| Input SA rejects     | 0 |   |
| Output packet count  |   | 0 |

```

Output packet pad count 0
Output packet error count 0
CAM destination filters: 1, CAM source filters: 0
Packet Forwarding Engine configuration:
 Destination slot: 0
CoS information:
 Direction : Output
 CoS transmit queue Bandwidth Buffer Priority
Limit
 % bps % usec
0 best-effort 75 7500000000 75 0 low
none
7 network-control 5 500000000 5 0 low
none
8 mcast 20 2000000000 20 0 low
none

```

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523) (Generation 143)

Flags: SNMP-Traps 0x0 Encapsulation: ENET2

Traffic statistics:

```

Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

```

Local statistics:

```

Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

```

Transit statistics:

```

Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps

```

Protocol eth-switch, MTU: 0, Generation: 170, Route table: 0

Flags: Trunk-Mode

### show interfaces extensive (Asymmetric Flow Control)

```
user@switch> show interfaces xe-0/0/1 extensive
```

Physical interface: xe-0/0/1, Enabled, Physical link is Up

Interface index: 49195, SNMP ifIndex: 591, Generation: 169

Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU

Error: None, MAC-REWRITE Error: None, Loopback: Disabled, Source filtering:

Disabled,

Configured-flow-control tx-buffers: off rx-buffers: on

Device flags : Present Running

Interface flags: SNMP-Traps Internal: 0x0

Link flags : None

CoS queues : 12 supported, 12 maximum usable queues

Hold-times : Up 0 ms, Down 0 ms

Current address: 00:1d:b5:f7:4e:e1, Hardware address: 00:1d:b5:f7:4e:e1

Last flapped : 2011-06-01 00:42:03 PDT (00:03:08 ago)

Statistics last cleared: 2011-06-01 00:44:39 PDT (00:00:32 ago)

Traffic statistics:

```

Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps

```

IPv6 transit statistics:

```

Input bytes : 0

```

```

Output bytes : 0
Input packets: 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 12 supported, 9 in use
Queue counters: Queued packets Transmitted packets Dropped packets

0 best-effort 0 0 0
1 fc7 0 0 0
2 no-loss 0 0 0
3 fcoe 0 0 0
4 fc4 0 0 0
5 fc5 0 0 0
6 fc6 0 0 0
7 network-cont 0 0 0
8 mcast 0 0 0

Queue number: Mapped forwarding classes
0 best-effort
1 fc7
2 no-loss
3 fcoe
4 fc4
5 fc5
6 fc6
7 network-control
8 mcast

Active alarms : None
Active defects : None
MAC statistics:
Total octets Receive Transmit
Total packets 0 0
Unicast packets 0 0
Broadcast packets 0 0
Multicast packets 0 0
CRC/Align errors 0 0
FIFO errors 0 0
MAC control frames 0 0
MAC pause frames 0 0
Oversized frames 0
Jabber frames 0
Fragment frames 0
VLAN tagged frames 0
Code violations 0
MAC Priority Flow Control Statistics:
Priority : 0 0 0
Priority : 1 0 0

```

```

Priority : 2 0 0
Priority : 3 0 0
Priority : 4 0 0
Priority : 5 0 0
Priority : 6 0 0
Priority : 7 0 0
Filter statistics:
Input packet count 0
Input packet rejects 0
Input DA rejects 0
Input SA rejects 0
Output packet count 0
Output packet pad count 0
Output packet error count 0
CAM destination filters: 1, CAM source filters: 0
Packet Forwarding Engine configuration:
Destination slot: 0
CoS information:
Direction : Output
CoS transmit queue Bandwidth Buffer Priority Limit
 % bps % usec
0 best-effort 75 7500000000 75 0 low none
7 network-control 5 500000000 5 0 low none
8 mcast 20 2000000000 20 0 low none

Logical interface xe-0/0/1.0 (Index 73) (SNMP ifIndex 523) (Generation 143)
Flags: SNMP-Traps 0x0 Encapsulation: ENET2
Traffic statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Local statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Transit statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps
Protocol eth-switch, MTU: 0, Generation: 170, Route table: 0
Flags: Trunk-Mode

```

### show interfaces terse

```

user@switch> show interfaces xe-0/0/1 terse
Interface Admin Link Proto Local Remote

xe-0/0/1 up up
xe-0/0/1.0 up up eth-switch

```

### show interfaces (QFabric System)

```

user@switch> show interfaces node1:xe-0/0/0
Physical interface: node1:xe-0/0/0, Enabled, Physical link is Down
Interface index: 129, SNMP ifIndex: 2884086
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Duplex: Full-Duplex, BPDU
Error: None, MAC-REWRITE Error: None,
Loopback: Disabled, Source filtering: Disabled, Flow control: Enabled

```

```
Interface flags: Internal: 0x4000
CoS queues : 8 supported, 8 maximum usable queues
Current address: 02:00:09:03:00:00, Hardware address: 02:00:09:03:00:00
Last flapped : Never
Input rate : 0 bps (0 pps)
Output rate : 0 bps (0 pps)
```



## CHAPTER 8

# LAGs and LACP Operational Commands

- `show lacp interfaces`
- `show lacp statistics interfaces (View)`

## show lacp interfaces

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>show lacp interfaces</code><br><code>&lt;interface-name&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Release Information</b>      | Command introduced in Junos OS Release 10.0 for EX Series switches.<br>Command introduced in Junos OS Release 11.1 for the QFX Series.<br>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Display Link Aggregation Control Protocol (LACP) information about the specified aggregated Ethernet or Gigabit Ethernet interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>                  | <code>none</code> —Display LACP information for all interfaces.<br><br><code>interface-name</code> —(Optional) Display LACP information for the specified interface: <ul style="list-style-type: none"><li>• Aggregated Ethernet—<code>aex</code></li><li>• Gigabit Ethernet—<code>ge-fpc/pic/port</code></li><li>• 10-Gigabit Ethernet—<code>xe-fpc/pic/port</code></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Configuring Aggregated Ethernet High-Speed Uplinks Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch</i></li><li>• <i>Example: Configuring Aggregated Ethernet High-Speed Uplinks with LACP Between an EX4200 Virtual Chassis Access Switch and an EX4200 Virtual Chassis Distribution Switch</i></li><li>• <a href="#">Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79</a></li><li>• <a href="#">Configuring Aggregated Ethernet Links (CLI Procedure)</a></li><li>• <a href="#">Configuring Link Aggregation on page 77</a></li><li>• <a href="#">Configuring Aggregated Ethernet LACP (CLI Procedure)</a></li><li>• <a href="#">Configuring Aggregated Ethernet LACP on page 76</a></li><li>• <a href="#">Configuring LACP Link Protection of Aggregated Ethernet Interfaces (CLI Procedure)</a></li><li>• <a href="#">Understanding Aggregated Ethernet Interfaces and LACP</a></li><li>• <a href="#">Understanding Aggregated Ethernet Interfaces and LACP on page 73</a></li><li>• <a href="#">Junos OS Interfaces Fundamentals Configuration Guide</a></li></ul> |
| <b>List of Sample Output</b>    | <a href="#">show lacp interfaces (EX Series Switches) on page 386</a><br><a href="#">show lacp interfaces (QFX Series) on page 387</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Output Fields</b>            | <a href="#">Table 34 on page 385</a> lists the output fields for the <code>show lacp interfaces</code> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



Table 34: show lacp interfaces Output Fields

| Field Name           | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aggregated interface | Aggregated Ethernet interface name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| LACP State           | <p>LACP state information for each aggregated Ethernet interface:</p> <ul style="list-style-type: none"> <li>For a child interface configured with the <b>force-up</b> statement, LACP state displays <b>FUP</b> along with the interface name.</li> <li><b>Role</b>—Role played by the interface. It can be one of the following: <ul style="list-style-type: none"> <li><b>Actor</b>—Local device participating in the LACP negotiation.</li> <li><b>Partner</b>—Remote device participating in the LACP negotiation.</li> </ul> </li> <li><b>Exp</b>—Expired state. <b>Yes</b> indicates that the actor or partner is in an expired state. <b>No</b> indicates that the actor or partner is not in an expired state.</li> <li><b>Def</b>—Default. <b>Yes</b> indicates that the actor's receive machine is using the default operational partner information, which is administratively configured for the partner. <b>No</b> indicates that the operational partner information in use has been received in an LACP PDU.</li> <li><b>Dist</b>—Distribution of outgoing frames. <b>No</b> indicates that the distribution of outgoing frames on the link is currently disabled and is not expected to be enabled. Otherwise, the value is <b>Yes</b>.</li> <li><b>Col</b>—Collection of incoming frames. <b>Yes</b> indicates that the collection of incoming frames on the link is currently enabled and is not expected to be disabled. Otherwise, the value is <b>No</b>.</li> <li><b>Syn</b>—Synchronization. If the value is <b>Yes</b>, the link is considered to be synchronized. The link has been allocated to the correct link aggregation group, the group has been associated with a compatible aggregator, and the identity of the link aggregation group is consistent with the system ID and operational key information transmitted. If the value is <b>No</b>, the link is not synchronized. The link is currently not in the right aggregation.</li> <li><b>Aggr</b>—Ability of the aggregation port to aggregate (<b>Yes</b>) or to operate only as an individual link (<b>No</b>).</li> <li><b>Timeout</b>—LACP timeout preference. Periodic transmissions of LACP PDUs occur at either a slow or a fast transmission rate, depending upon the expressed LACP timeout preference (<b>Long Timeout</b> or <b>Short Timeout</b>).</li> <li><b>Activity</b>—Actor's or partner's port activity. <b>Passive</b> indicates the port's preference for not transmitting LAC PDUs unless its partner's control value is <b>Active</b>. <b>Active</b> indicates the port's preference to participate in the protocol regardless of the partner's control value.</li> </ul> |

Table 34: show lacp interfaces Output Fields (*continued*)

| Field Name    | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LACP Protocol | <p>LACP protocol information for each aggregated interface:</p> <ul style="list-style-type: none"> <li>Link state (active or standby) indicated in parentheses next to the interface when link protection is configured.</li> <li><b>Receive State</b>—One of the following values: <ul style="list-style-type: none"> <li><b>Current</b>—The state machine receives an LACP PDU and enters the <b>Current</b> state.</li> <li><b>Defaulted</b>—If no LACP PDU is received before the timer for the <b>Current</b> state expires a second time, the state machine enters the <b>Defaulted</b> state.</li> <li><b>Expired</b>—If no LACP PDU is received before the timer for the <b>Current</b> state expires once, the state machine enters the <b>Expired</b> state.</li> <li><b>Initialize</b>—When the physical connectivity of a link changes or a Begin event occurs, the state machine enters the <b>Initialize</b> state.</li> <li><b>LACP Disabled</b>—If the port is operating in half duplex, the operation of LACP is disabled on the port, forcing the state to <b>LACP Disabled</b>. This state is similar to the <b>Defaulted</b> state, except that the port is forced to operate as an individual port.</li> <li><b>Port Disabled</b>—If the port becomes inoperable and a Begin event has not occurred, the state machine enters the <b>Port Disabled</b> state.</li> </ul> </li> <li><b>Transmit State</b>—Transmit state of the state machine. The transmit state is one of the following values: <ul style="list-style-type: none"> <li><b>Fast periodic</b>—Periodic transmissions are enabled at a fast transmission rate.</li> <li><b>No periodic</b>—Periodic transmissions are disabled.</li> <li><b>Periodic timer</b>—Transitory state entered when the periodic timer expires.</li> <li><b>Slow periodic</b>—Periodic transmissions are enabled at a slow transmission rate.</li> </ul> </li> <li><b>Mux State</b>—State of the multiplexer state machine for the aggregation port. The state is one of the following values: <ul style="list-style-type: none"> <li><b>Attached</b>—The multiplexer state machine initiates the process of attaching the port to the selected aggregator.</li> <li><b>Collecting—Yes</b> indicates that the receive function of this link is enabled with respect to its participation in an aggregation. Received frames are passed to the aggregator for collection. <b>No</b> indicates the receive function of this link is not enabled.</li> <li><b>Collecting distributing</b>—Collecting and distributing states are merged together to form a combined state (coupled control). Because independent control is not possible, the coupled control state machine does not wait for the partner to signal that collection has started before enabling both collection and distribution.</li> <li><b>Detached</b>—Process of detaching the port from the aggregator is in progress.</li> <li><b>Distributing—Yes</b> indicates that the transmit function of this link is enabled with respect to its participation in an aggregation. Frames can be passed down from the aggregator's distribution function for transmission. <b>No</b> indicates the transmit function of this link is not enabled.</li> <li><b>Waiting</b>—The multiplexer state machine is in a holding process, awaiting an outcome.</li> </ul> </li> </ul> |

## Sample Output

### show lacp interfaces (EX Series Switches)

```

user@switch> show lacp interfaces ae5
Aggregated interface: ae5
 LACP state: Role Exp Def Dist Co1 Syn Aggr Timeout Activity
 xe-2/0/7 Actor No No Yes Yes Yes Yes Fast Active
 xe-2/0/7 Partner No No Yes Yes Yes Yes Fast Passive

```

|          |         |    |    |    |     |     |     |      |         |
|----------|---------|----|----|----|-----|-----|-----|------|---------|
| xe-4/0/7 | Actor   | No | No | No | No  | No  | Yes | Fast | Active  |
| xe-4/0/7 | Partner | No | No | No | Yes | Yes | Yes | Fast | Passive |

| LACP protocol:     | Receive State | Transmit State | Mux State               |
|--------------------|---------------|----------------|-------------------------|
| xe-2/0/7(Active)   | Current       | Fast periodic  | Collecting distributing |
| xe-34/0/7(Standby) | Current       | Fast periodic  | Waiting                 |

### show lacp interfaces (QFX Series)

```

user@switch> show lacp interfaces nodegroup1:ae0 extensive
Aggregated interface: nodegroup1:ae0
LACP state: Role Exp Def Dist Col Syn Aggr Timeout Activity

node1:xe-0/0/1FUP Actor No Yes No No No No Yes Fast
Active
node1xe-0/0/1FUP Partner No Yes No No No No Yes Fast
Passive
node2:xe-0/0/2 Actor No Yes No No No No Yes Fast
Active
node2:xe-0/0/2 Partner No Yes No No No No Yes Fast
Passive

```

|              | LACP protocol:           | Receive State | Transmit State | Mux State  |
|--------------|--------------------------|---------------|----------------|------------|
|              | node1:xe-0/0/1FUP        | Current       | Fast periodic  | Collecting |
| distributing | node2:xe-0/0/2           | Current       | Fast periodic  | Collecting |
| distributing | node1:xe-0/0/1 (active)  | Current       | Fast periodic  | Collecting |
| distributing | node2:xe-0/0/2 (standby) | Current       | Fast periodic  | WAITING    |

## show lacp statistics interfaces (View)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <b>show lacp statistics interfaces</b> <i>interface-name</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Release Information</b>      | Command modified in Release 10.2 of Junos OS.<br>Command introduced in Release 11.1 of Junos OS for the QFX Series.<br>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | Display Link Aggregation Control Protocol (LACP) statistics about the specified aggregated Ethernet interface or redundant Ethernet interface. If you do not specify an interface name, LACP statistics for all interfaces are displayed.                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                  | <i>interface-name</i> —(Optional) Name of an interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring Link Aggregation on page 77</a></li> <li>• <a href="#">Verifying the Status of a LAG Interface on page 89</a></li> <li>• <a href="#">Verifying That LACP Is Configured Correctly and Bundle Members Are Exchanging LACP Protocol Packets on page 88</a></li> <li>• <a href="#">Example: Configuring Link Aggregation Between a QFX Series Product and an Aggregation Switch on page 79</a></li> <li>• <a href="#">Example: Configuring Link Aggregation with LACP Between a QFX Series Product and an Aggregation Switch on page 84</a></li> </ul> |
| <b>List of Sample Output</b>    | <a href="#">show lacp statistics interfaces on page 390</a><br><a href="#">show lacp statistics interfaces (QFX Series) on page 390</a><br><a href="#">show lacp statistics interfaces (QFabric Systems) on page 390</a>                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Output Fields</b>            | <a href="#">Table 35 on page 389</a> lists the output fields for the <b>show lacp statistics interfaces</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                        |

**Table 35: show lacp statistics interfaces Output Fields**

| Field Name           | Field Description                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aggregated interface | Aggregated interface value.                                                                                                                                                                                                                                                                                                                                                                                                 |
| LACP Statistics      | <p>LACP statistics provide the following information:</p> <ul style="list-style-type: none"> <li>• <b>LACP Rx</b>—LACP received counter that increments for each normal hello.</li> <li>• <b>LACP Tx</b>—LACP transmit counter that increments for each normal hello.</li> <li>• <b>Unknown Rx</b>—Number of unrecognized packet errors logged.</li> <li>• <b>Illegal Rx</b>—Number of invalid packets received.</li> </ul> |

## Sample Output

### show lacp statistics interfaces

```
user@host> show lacp statistics interfaces ae0
Aggregated interface: ae0
LACP Statistics: LACP Rx LACP Tx Unknown Rx Illegal Rx
ge-2/0/0 1352 2035 0 0
ge-2/0/1 1352 2056 0 0
ge-2/2/0 1352 2045 0 0
ge-2/2/1 1352 2043 0 0
```

### show lacp statistics interfaces (QFX Series)

```
user@host> show lacp statistics interfaces ae0
Aggregated interface: ae0
LACP Statistics: LACP Rx LACP Tx Unknown Rx Illegal Rx
xe-0/0/2 1352 2035 0 0
xe-0/0/3 1352 2056 0 0
```

### show lacp statistics interfaces (QFabric Systems)

```
user@host> show lacp statistics interfaces nodegroup1:ae0
Aggregated interface: nodegroup1:ae0
LACP Statistics: LACP Rx LACP Tx Unknown Rx Illegal Rx
node1:xe-0/0/2 1352 2035 0 0
node2:xe-0/0/3 1352 2056 0 0
```