



Junos[®] OS for EX Series and QFX Series Ethernet Switches

OpenFlow for EX9200 and QFX5100 Switches

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Release 14.1
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show openflow interfaces	117
show openflow statistics flows	121
show openflow statistics groups	124
show openflow statistics interfaces	127
show openflow statistics packet	130
show openflow statistics queue	132
show openflow statistics summary	135
show openflow statistics tables	137
show openflow summary	140
show openflow switch	141

Part 4

Index

Index	147
-------------	-----

PART 1

Overview

- [OpenFlow Overview on page 3](#)
- [OpenFlow Hybrid Interfaces on page 47](#)

routing or bridging domains. One advantage of using hybrid interfaces is that you can use fewer physical interfaces where port density is an issue. However, using hybrid interfaces requires some additional configuration, and untagged traffic entering a hybrid port cannot be forwarded according to OpenFlow flow entries. Additionally, several physical port properties such as Layer 1 statistics are reported for all logical interfaces on that physical interface. Thus, when you configure a physical interface in hybrid mode, these properties are reported for all OpenFlow and non-OpenFlow logical interfaces on that physical interface. These properties include queue drops, framing errors, CRC errors, and collisions. When using hybrid interfaces, if you use the Link Layer Discovery Protocol (LLDP) for topology discovery, you must ensure that any LLDP frames entering a hybrid interface are tagged appropriately.

**Related
Documentation**

- [Understanding Support for OpenFlow on Devices Running Junos OS on page 7](#)
- [Configuring OpenFlow Hybrid Interfaces on MX Series Routers](#)
- [Configuring OpenFlow Hybrid Interfaces on EX9200 Switches on page 67](#)
- [Binding VLAN IDs to Logical Interfaces](#)

PART 2

Configuration

- [OpenFlow Basic Configuration on page 51](#)
- [OpenFlow Hybrid Interfaces on page 67](#)
- [Configuration Statements on page 79](#)

id (Protocols OpenFlow)

Syntax	<code>id id;</code>
Hierarchy Level	[edit protocols openflow switch switch-name controller]
Release Information	Statement introduced in Junos OS Release 13.3. Statement introduced in Junos OS Release 13.3 for EX Series switches. Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Specify an optional numeric identifier for the OpenFlow controller.
Options	<i>id</i> —Numeric identifier for the OpenFlow controller.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Understanding Support for OpenFlow on Devices Running Junos OS on page 7• controller (Protocols OpenFlow) on page 81

interfaces (Protocols OpenFlow)

Syntax	<pre>interfaces { <i>interface-name</i> port-id <i>port</i>; }</pre>
Hierarchy Level	[edit protocols openflow switch <i>switch-name</i>]
Release Information	Statement introduced in Junos OS Release 13.3. Statement introduced in Junos OS Release 13.3 for EX Series switches. Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Configure a Layer 2 interface as an OpenFlow-enabled interface.
Options	<p><i>interface-name</i>—Name of the interface, including the logical unit number—for example, ge-1/1/0.0.</p> <p><i>port-id port</i>—(Optional) Unique numeric value specifying the port ID associated with the OpenFlow interface. You can manually configure a port ID in the range 1 through 32640. If you do not specify a port, the system generates a value in the range from 32641 through 65280.</p> <p>Range: 1 through 32,640</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Understanding Support for OpenFlow on Devices Running Junos OS on page 7• openflow (Protocols OpenFlow) on page 85• switch (Protocols OpenFlow) on page 90

openflow (Protocols OpenFlow)

Syntax	<pre> openflow { switch <i>switch-name</i> { controller { address <i>address</i>; id <i>id</i>; protocol tcp { port <i>port</i>; } role equal; } default-action (drop packet-in); interfaces { interface-name port-id <i>port</i>; } purge-flow-timer <i>seconds</i>; } traceoptions { file <<i>filename</i>> <files <i>number</i>> <match <i>regular-expression</i>> <size <i>size</i>> <world-readable no-world-readable>; flag <i>flag</i>; } } </pre>
Hierarchy Level	[edit protocols]
Release Information	<p>Statement introduced in Junos OS Release 13.3.</p> <p>Statement introduced in Junos OS Release 13.3 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.</p>
Description	Configure support for OpenFlow on a device running Junos OS. To configure OpenFlow, the device must be running a Junos OS release that supports OpenFlow and have the OpenFlow software package installed. The OpenFlow software package release must match the Junos OS release of the device on which the software is installed.
Default	OpenFlow is disabled on the device.
Options	The remaining statements are explained separately.
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Support on Devices Running Junos OS on page 3 • Understanding Support for OpenFlow on Devices Running Junos OS on page 7 • OpenFlow Operational Mode Commands on page 95


port (Protocols OpenFlow)

Syntax	<code>port port;</code>
Hierarchy Level	[edit protocols openflow switch switch-name controller protocol protocol]
Release Information	Statement introduced in Junos OS Release 13.3. Statement introduced in Junos OS Release 13.3 for EX Series switches. Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Specify the OpenFlow controller port to which the OpenFlow virtual switch connects.
Options	port —Numeric value specifying the OpenFlow controller port to which the device should connect. Range: 1024 through 65,535 Default: 6633
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Understanding Support for OpenFlow on Devices Running Junos OS on page 7• address (Protocols OpenFlow) on page 80• controller (Protocols OpenFlow) on page 81• protocol (Protocols OpenFlow) on page 87

protocol (Protocols OpenFlow)

Syntax	<pre>protocol tcp { port port; }</pre>
Hierarchy Level	[edit protocols openflow switch switch-name controller]
Release Information	<p>Statement introduced in Junos OS Release 13.3.</p> <p>Statement introduced in Junos OS Release 13.3 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.</p>
Description	Specify the connection protocol that the OpenFlow virtual switch uses to connect to the OpenFlow controller.
Options	<p>tcp—Establish a TCP connection to the controller.</p> <p>The remaining statement is explained separately.</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Understanding Support for OpenFlow on Devices Running Junos OS on page 7 • controller (Protocols OpenFlow) on page 81 • port (Protocols OpenFlow) on page 86

purge-flow-timer (Protocols OpenFlow)

Syntax	<code>purge-flow-timer seconds;</code>
Hierarchy Level	[edit protocols openflow switch switch-name]
Release Information	Statement introduced in Junos OS Release 13.3. Statement introduced in Junos OS Release 13.3 for EX Series switches. Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	<p>For an OpenFlow virtual switch, specify the number of seconds after which an invalid OpenFlow flow entry is deleted from the flow table.</p> <p>If you do not configure the purge-flow-timer statement, the device purges invalid flows from hardware, but indefinitely retains the corresponding flow entries in the flow table. If you configure the purge-flow-timer statement, the device purges invalid flows from hardware, and after the specified number of seconds, the device deletes the invalid flow entries from the flow table. Configuring a value of 0 causes the device to immediately delete invalid flow entries from the flow table.</p> <div> NOTE: By default, if you remove an active OpenFlow interface from an existing OpenFlow configuration, flow entries that match on this interface as the ingress interface and flow entries that include this interface in their action list (for OpenFlow v1.0) or flow instructions (for OpenFlow v1.3.1) are invalid and are automatically purged from the flow table and from the hardware regardless of whether you configure the purge-flow-timer statement.</div>
Options	<p>seconds—Number of seconds after which an invalid flow entry is deleted from the flow table.</p> <p>Range: 0 through 300</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Understanding Support for OpenFlow on Devices Running Junos OS on page 7• Understanding OpenFlow Flow Entry Timers on Devices Running Junos OS on page 19

role (Protocols OpenFlow)

Syntax	role equal;
Hierarchy Level	[edit protocols openflow switch switch-name controller]
Release Information	Statement introduced in Junos OS Release 13.3. Statement introduced in Junos OS Release 13.3 for EX Series switches. Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Specify the role of each OpenFlow controller when configuring more than one controller for a virtual switch. A single controller configuration automatically puts the controller in active mode. In active mode, the virtual switch automatically initiates a connection to the controller.
Options	equal —Configure the controller as the active controller in a single controller configuration.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Understanding Support for OpenFlow on Devices Running Junos OS on page 7 • controller (Protocols OpenFlow) on page 81

switch (Protocols OpenFlow)

Syntax `switch switch-name {
 controller {
 address address;
 id id;
 protocol tcp {
 port port;
 }
 role equal;
 }
 default-action (drop | packet-in);
 interfaces {
 interface-name port-id port;
 }
 purge-flow-timer seconds;
 }`

Hierarchy Level [edit protocols [openflow](#)]

Release Information Statement introduced in Junos OS Release 13.3.
Statement introduced in Junos OS Release 13.3 for EX Series switches.
Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.

Description Configure an OpenFlow virtual switch.

Options *switch-name*—User-configured identifier for the OpenFlow virtual switch. The identifier can include a maximum of 60 characters.

The remaining statements are explained separately.

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

Related Documentation

- [Understanding Support for OpenFlow on Devices Running Junos OS on page 7](#)
- [controller \(Protocols OpenFlow\) on page 81](#)
- [default-action \(Protocols OpenFlow\) on page 82](#)
- [interfaces \(Protocols OpenFlow\) on page 84](#)
- [openflow \(Protocols OpenFlow\) on page 85](#)

traceoptions (Protocols OpenFlow)

Syntax	<pre> traceoptions { file <filename> <files number> <match regular-expression> <size size> <world-readable no-world-readable>; flag flag; no-remote-trace; } </pre>
Hierarchy Level	[edit protocols openflow]
Release Information	<p>Statement introduced in Junos OS Release 13.3.</p> <p>Statement introduced in Junos OS Release 13.3 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.</p>
Description	Define tracing operations for OpenFlow.
Default	If you do not include this statement, no OpenFlow-specific tracing operations are performed.
Options	<p>file <i>filename</i>—Name of the file to receive the output of the tracing operation. All files are placed in the <code>/var/log</code> directory.</p> <p>Default: <code>/var/log/ofd</code></p> <p>files <i>number</i>—(Optional) Maximum number of trace files. When a trace file named <i>trace-file</i> reaches its maximum size, it is renamed and compressed to <i>trace-file.0.gz</i>. When <i>trace-file</i> again reaches its maximum size, <i>trace-file.0.gz</i> is renamed <i>trace-file.1.gz</i>, and <i>trace-file</i> is renamed and compressed to <i>trace-file.0.gz</i>. This renaming scheme continues until the maximum number of trace files is reached. After this, the oldest trace file is overwritten.</p> <p>If you specify a maximum number of files, you also must specify a maximum file size by using the size option and also a filename.</p> <p>Range: 2 through 1000 files</p> <p>Default: 10 files</p> <p>flag <i>flag</i>—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. You can include the following flags:</p> <ul style="list-style-type: none"> • all—All OpenFlow events. • barrier—OpenFlow barrier events. • configuration—OpenFlow configuration events. • filter—OpenFlow filter events. • flow—OpenFlow flow events. • function—OpenFlow entry and exit events. • group—(Appears only for Juniper Networks devices running OpenFlow v1.3.1 or later) OpenFlow group events.

- **interface**—OpenFlow interface events.
- **nh**—OpenFlow next-hop events.
- **packet-io**—OpenFlow packet in and packet out events.
- **packets**—OpenFlow packet events.
- **statistics**—OpenFlow statistics request and reply events.
- **switch**—OpenFlow switch events including controller connection messages and keepalives, and packets sent to and received from the controller.

match *regular-expression*—(Optional) Log only those lines that match the regular expression.

no-remote-trace—(Optional) Disable tracing and logging operations that track normal operations, error conditions, and packets that are generated by or have passed through the Juniper Networks device.

no-world-readable—(Optional) Disable unrestricted file access, which restricts file access to the owner. This is the default.

size *size*—(Optional) Maximum size of each trace file in bytes, kilobytes (KB), megabytes (MB), or gigabytes (GB). If you do not specify a unit, the default is bytes. If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option and a filename.

Syntax: *size* to specify bytes, *sizek* to specify KB, *sizem* to specify MB, or *sizeg* to specify GB

Range: 10,240 through 1,073,741,824 bytes

Default: 128 KB

world-readable—(Optional) Enable unrestricted file access.

Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
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Related Documentation	<ul style="list-style-type: none">• Understanding Support for OpenFlow on Devices Running Junos OS on page 7• openflow (Protocols OpenFlow) on page 85
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PART 3

Administration

- [Operational Commands on page 95](#)

CHAPTER 6

Operational Commands

- [OpenFlow Operational Mode Commands on page 95](#)
- [show openflow capability](#)
- [show openflow controller](#)
- [show openflow filters](#)
- [show openflow flows](#)
- [show openflow groups](#)
- [show openflow interfaces](#)
- [show openflow statistics flows](#)
- [show openflow statistics groups](#)
- [show openflow statistics interfaces](#)
- [show openflow statistics packet](#)
- [show openflow statistics queue](#)
- [show openflow statistics summary](#)
- [show openflow statistics tables](#)
- [show openflow summary](#)
- [show openflow switch](#)

OpenFlow Operational Mode Commands

[Table 36 on page 95](#) summarizes the operational mode commands that you can use to monitor and troubleshoot OpenFlow operations on an OpenFlow-enabled device running Junos OS. Commands are listed in alphabetical order.

Table 36: OpenFlow Operational Mode Commands

Command	Task
show openflow capability	Display support information for OpenFlow features, actions, and match conditions on the device.
show openflow controller	Display OpenFlow controller information and status.

Table 36: OpenFlow Operational Mode Commands (*continued*)

Command	Task
<code>show openflow filters</code>	Display information for filters bound to OpenFlow interfaces.
<code>show openflow flows</code>	Display OpenFlow flow information.
<code>show openflow groups</code>	Display OpenFlow groups information.
<code>show openflow interfaces</code>	Display physical characteristics and status information for interfaces participating in OpenFlow.
<code>show openflow statistics flows</code>	Display statistics for OpenFlow flow entries.
<code>show openflow statistics groups</code>	Display statistics for OpenFlow groups.
<code>show openflow statistics interfaces</code>	Display statistics for interfaces participating in OpenFlow.
<code>show openflow statistics packet</code>	Display statistics for packet-in and packet-out actions.
<code>show openflow statistics queue</code>	Display statistics for OpenFlow queues in hardware.
<code>show openflow statistics summary</code>	Display summary statistics for all OpenFlow flows.
<code>show openflow statistics tables</code>	Display statistics for OpenFlow flow tables.
<code>show openflow summary</code>	Display summary information for OpenFlow flows.
<code>show openflow switch</code>	Display OpenFlow message statistics for OpenFlow virtual switches.

show openflow capability

Syntax	show openflow capability <action feature match-condition>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display support information for OpenFlow features, actions, and match conditions on the Juniper Networks device.
Options	<p>none—Display support information for all OpenFlow capabilities.</p> <p>action—(Optional) Display support information for OpenFlow actions.</p> <p>feature—(Optional) Display support information for OpenFlow features.</p> <p>match-condition—(Optional) Display support information for OpenFlow match conditions.</p>
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • OpenFlow Support on Devices Running Junos OS on page 3
List of Sample Output	show openflow capability on page 100 show openflow capability (OpenFlow 1.3.1) on page 101 show openflow capability action on page 102 show openflow capability feature on page 102 show openflow capability match-condition on page 102 show openflow capability match-condition (OpenFlow 1.3.1) on page 102
Output Fields	Table 37 on page 97 lists the output fields for the show openflow capability command. Output fields are listed in the approximate order in which they appear.

Table 37: show openflow capability Output Fields

Field Name	Field Description
Supported Features—Indicates Whether the Juniper Networks Device Supports the Following OpenFlow Features	
Flow statistics	Indicates whether the device supports OpenFlow flow statistics.
Table statistics	Indicates whether the device supports OpenFlow flow table statistics.
Port statistics	Indicates whether the device supports OpenFlow port statistics.

Table 37: show openflow capability Output Fields (*continued*)

Field Name	Field Description
Group statistics	Indicates whether the device supports OpenFlow group statistics. NOTE: This field appears only if the device supports OpenFlow v1.3.1 or later.
802.1d spanning tree	Indicates whether the device supports the 802.1D Spanning Tree Protocol.
Reassemble IP fragments	Indicates whether the device supports reassembling IP fragments.
Queue statistics	Indicates whether the device supports OpenFlow queue statistics.
Match IP addresses in ARP pkts	Indicates whether the device supports matching on IP addresses in ARP packets.
Supported Match Conditions—Indicates Whether the Juniper Networks Device Supports the Following OpenFlow Match Conditions	
Switch input port	Indicates whether the device supports matching against the ingress switch port.
VLAN vid	Indicates whether the device supports matching against the VLAN identifier in the outermost VLAN tag.
Ethernet source address	Indicates whether the device supports matching against the Ethernet source address.
Ethernet destination address	Indicates whether the device supports matching against the Ethernet destination address.
Ethernet frame type	Indicates whether the device supports matching against the Ethernet frame type.
IP protocol	Indicates whether the device supports matching against the IP protocol or lower 8 bits of the ARP opcode.
TCP/UDP source port	Indicates whether the device supports matching against the TCP or UDP source port.
TCP/UDP destination port	Indicates whether the device supports matching against the TCP or UDP destination port.
IP(v4) source address	Indicates whether the device supports matching against the IPv4 source address. NOTE: IPv4 appears only if the device supports OpenFlow v1.3.1 or later.

Table 37: show openflow capability Output Fields (*continued*)

Field Name	Field Description
IP(v4) destination address	Indicates whether the device supports matching against the IPv4 destination address. NOTE: IPv4 appears only if the device supports OpenFlow v1.3.1 or later.
IPv6 source address	Indicates whether the device supports matching against the IPv6 source address. NOTE: This field appears only if the device supports OpenFlow v1.3.1 or later.
IPv6 destination address	Indicates whether the device supports matching against the IPv6 destination address. NOTE: This field appears only if the device supports OpenFlow v1.3.1 or later.
VLAN priority	Indicates whether the device supports matching against the VLAN priority in the outermost VLAN tag.
IP ToS (DSCP field)	Indicates whether the device supports matching against the IPv4 ToS bits.
Supported Actions—Indicates Whether the Juniper Networks Device Supports the Following OpenFlow Actions	
Output to switch port	Indicates whether the device supports forwarding the packet to a specified port.
Set the 802.1q VLAN id	Indicates whether the device supports the optional Modify-Field action to modify the existing 802.1Q VLAN ID of the outermost VLAN tag in the frame header or to add a new header with the VLAN ID if none exists.
Set the 802.1q priority	Indicates whether the device supports the optional Modify-Field action to modify the existing 802.1Q VLAN priority of the outermost VLAN tag in the frame header or to add a new header with the VLAN priority if none exists.
Strip the 802.1q header	Indicates whether the device supports the optional Modify-Field action to remove the outermost VLAN header in the frame.
Ethernet source address	Indicates whether the device supports the optional Modify-Field action to modify the Ethernet source address field in the frame header.
Ethernet destination address	Indicates whether the device supports the optional Modify-Field action to modify the Ethernet destination address field in the frame header.

Table 37: show openflow capability Output Fields (*continued*)

Field Name	Field Description
IP source address	Indicates whether the device supports the optional Modify-Field action to modify the IP source address field and update the checksum in the packet header.
IP destination address	Indicates whether the device supports the optional Modify-Field action to modify the IP destination address field and update the checksum in the packet header.
IP ToS (DSCP)	Indicates whether the device supports the optional Modify-Field action to modify the IPv4 ToS field in the packet header.
TCP/UDP source port	Indicates whether the device supports the optional Modify-Field action to modify the TCP or UDP source port field and update the checksum in the packet header.
TCP/UDP destination port	Indicates whether the device supports the optional Modify-Field action to modify the TCP or UDP destination port field and update the checksum in the packet header.
Output to queue	Indicates whether the device supports the optional Enqueue action to set the queue ID for the packet.
Execute group	Indicates whether the device supports a group action to be executed. NOTE: This field appears only if the device supports OpenFlow v1.3.1 or later.

Sample Output

show openflow capability

```

user@host> show openflow capability
Openflowd platform feature support:
Flow statistics:    Yes
Table statistics:   Yes
Port statistics:    Yes
802.1d spanning tree: No
Reassemble IP fragments: No
Queue statistics:   Yes
Match IP addresses in ARP pkts: No

Openflowd platform match condition support:
Switch input port:  Yes
VLAN vid:           Yes
Ethernet source address: Yes
Ethernet destination address: Yes
Ethernet frame type: Yes
IP protocol:        Yes
TCP/UDP source port:  Yes
TCP/UDP destination port: Yes
IP source address:    Yes
IP destination address: Yes
VLAN priority:       Yes

```

```

IP ToS (DSCP field):    Yes

Openflowd platform action support:
Output to switch port:  Yes
Set the 802.1q VLAN id  Yes
Set the 802.1q priority: No
Strip the 802.1q header: Yes
Ethernet source address: No
Ethernet destination address: No
IP source address:      No
IP destination address: No
IP ToS (DSCP):          No
TCP/UDP source port:    No
TCP/UDP destination port: No
Output to queue:        No

```

show openflow capability (OpenFlow 1.3.1)

```

user@host> show openflow capability
Openflowd platform feature support:
Flow statistics:      Yes
Table statistics:     Yes
Port statistics:      Yes
Group statistics:     Yes
802.1d spanning tree: No
Reassemble IP fragments: No
Queue statistics:     Yes
Match IP addresses in ARP pkts: No

Openflowd platform match condition support:
Switch input port:    Yes
VLAN vid:             Yes
Ethernet source address: Yes
Ethernet destination address: Yes
Ethernet frame type: Yes
IP protocol:          Yes
TCP/UDP source port:  Yes
TCP/UDP destination port: Yes
IPv4 source address:  Yes
IPv4 destination address: Yes
IPv6 source address:  Yes
IPv6 destination address: Yes
VLAN priority:        Yes
IP ToS (DSCP field):  Yes

Openflowd platform action support:
Output to switch port: Yes
Set the 802.1q VLAN id  Yes
Set the 802.1q priority: No
Strip the 802.1q header: Yes
Ethernet source address: No
Ethernet destination address: No
IP source address:      No
IP destination address: No
IP ToS (DSCP):          No
TCP/UDP source port:    No
TCP/UDP destination port: No
Output to queue:        No
Execute Group:          Yes

```

show openflow capability action

```
user@host> show openflow capability action
Openflowd platform action support:
Output to switch port:    Yes
Set the 802.1q VLAN id   Yes
Set the 802.1q priority:  No
Strip the 802.1q header:  Yes
Ethernet source address:  No
Ethernet destination address: No
IP source address:        No
IP destination address:   No
IP ToS (DSCP):           No
TCP/UDP source port:      No
TCP/UDP destination port: No
Output to queue:         No
```

show openflow capability feature

```
user@host> show openflow capability feature
Openflowd platform feature support:
Flow statistics:    Yes
Table statistics:   Yes
Port statistics:    Yes
802.1d spanning tree: No
Reassemble IP fragments: No
Queue statistics:   Yes
Match IP addresses in ARP pkts: No
```

show openflow capability match-condition

```
user@host> show openflow capability match-condition
Openflowd platform match condition support:
Switch input port:    Yes
VLAN vid:             Yes
Ethernet source address: Yes
Ethernet destination address: Yes
Ethernet frame type: Yes
IP protocol:          Yes
TCP/UDP source port:   Yes
TCP/UDP destination port: Yes
IP source address:     Yes
IP destination address: Yes
VLAN priority:        Yes
IP ToS (DSCP field):   Yes
```

show openflow capability match-condition (OpenFlow 1.3.1)

```
user@host> show openflow capability match-condition
Openflowd platform match condition support:
Switch input port:    Yes
VLAN vid:             Yes
Ethernet source address: Yes
Ethernet destination address: Yes
Ethernet frame type: Yes
IP protocol:          Yes
TCP/UDP source port:   Yes
TCP/UDP destination port: Yes
IPv4 source address:   Yes
IPv4 destination address: Yes
IPv6 source address:   Yes
```

IPv6 destination address: Yes
VLAN priority: Yes
IP ToS (DSCP field): Yes

show openflow controller

Syntax	show openflow controller <address address> <switch switch-name>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display OpenFlow controller information and connection status. OpenFlow controllers are configured at the [edit protocols openflow switch switch-name] hierarchy level.
Options	none —Display information about all configured controllers. address address —(Optional) Display information about the controller at the specified IP address. switch switch-name —(Optional) Display information about controllers associated with the specified virtual switch.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • controller (Protocols OpenFlow) on page 81 • OpenFlow Support on Devices Running Junos OS on page 3 • Understanding the OpenFlow Version Negotiation Between the Controller and Devices Running Junos OS on page 15
List of Sample Output	show openflow controller (OpenFlow 1.3.1) on page 105 show openflow controller address (OpenFlow 1.3.1) on page 105 show openflow controller switch (OpenFlow 1.3.1) on page 106
Output Fields	Table 38 on page 104 lists the output fields for the show openflow controller command. Output fields are listed in the approximate order in which they appear.

Table 38: show openflow controller Output Fields

Field Name	Field Description
Controller socket	Socket on the controller to which the OpenFlow virtual switch connects.
Controller IP address	IP address of the OpenFlow controller.
Controller protocol	Protocol used by the switch to initiate a connection with the controller.

Table 38: show openflow controller Output Fields (*continued*)

Field Name	Field Description
Controller port	Port on the controller to which the OpenFlow virtual switch connects.
Controller connection state	Status of the connection between the OpenFlow virtual switch and the controller.
Number of connection attempt	Number of connection attempts made by the virtual switch to the controller.
Controller role	User-configured role of the controller.
Negotiated version	<p>A numerical value that represents the OpenFlow version that is negotiated between the Junos OS device and the OpenFlow controller during the initial connection.</p> <p>NOTE: This field appears only if the Junos OS device supports OpenFlow version 1.3.1 or later. .</p>
Negotiated version	<p>A numerical value that represents the OpenFlow version that is negotiated between the Junos OS device and the OpenFlow controller during the initial connection.</p> <p>NOTE: This field appears only if the Junos OS device supports OpenFlow version 1.3.1 or later.</p>

Sample Output

show openflow controller (OpenFlow 1.3.1)

```

user@host> show openflow controller
Openflowd controller information:
Controller socket: 15
Controller IP address: 198.51.100.174
Controller protocol: tcp
Controller port: 6633
Controller connection state: up
Number of connection attempt: 5
Controller role: equal
Negotiated version: 4

```

show openflow controller address (OpenFlow 1.3.1)

```

user@host> show openflow controller address 198.51.100.174
Openflowd controller information:
Controller socket: 15
Controller IP address: 198.51.100.174
Controller protocol: tcp
Controller port: 6633
Controller connection state: up
Number of connection attempt: 5
Controller role: equal
Negotiated version: 4

```

show openflow controller switch (OpenFlow 1.3.1)

```
user@host> show openflow controller switch OFswitch1
Openflowd controller information:
Controller socket: 15
Controller IP address: 198.51.100.174
Controller protocol: tcp
Controller port: 6633
Controller connection state: up
Number of connection attempt: 5
Controller role: equal
Negotiated version: 4
```

show openflow filters

Syntax	show openflow filters <interface <i>interface-name</i>> <switch <i>switch-name</i>>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display information for filters bound to OpenFlow interfaces.
Options	<p>none—Display information for all filters that are bound to OpenFlow interfaces.</p> <p>interface <i>interface-name</i>—(Optional) Display information for the filter bound to the specified OpenFlow interface. The interface name must include the logical unit number.</p> <p>switch <i>switch-name</i>—(Optional) Display information for filters bound to the interfaces configured under the specified OpenFlow virtual switch.</p>
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • Understanding OpenFlow Flows and Filters on Devices Running Junos OS on page 16
List of Sample Output	show openflow filters on page 108 show openflow filters interface on page 108 show openflow filters switch on page 108
Output Fields	Table 39 on page 107 lists the output fields for the show openflow filters command. Output fields are listed in the approximate order in which they appear.

Table 39: show openflow filters Output Fields

Field Name	Field Description
Switch Name	User-configured identifier for the OpenFlow virtual switch associated with the interface to which the filter is bound.
Number of filters	Number of filters bound to OpenFlow interfaces on the virtual switch.
Default action	Default action executed for packets that do not match any existing flow entries. Values are PACKET IN or DROP .
Filter name	Filter identifier consisting of the concatenation of the interface name (including the logical unit number) and an internally assigned switch ID.
Filter index	Auto-generated string that identifies the filter.

Table 39: show openflow filters Output Fields (*continued*)

Field Name	Field Description
Number of terms	Number of terms in the filter. Each term consists of match conditions and actions.
Number of priorities	Number of unique active flow priorities in the filter.
Term name	Filter term identifier, which consists of the filter name (interface name and switch ID), the flow priority, and a sequence number.
Priority ID	Flow entry priority. Higher priority terms are installed above lower priority terms.
Flow ID	Flow identifier associated with that flow entry.
Number of packets	Number of packets that have matched a filter term. A filter term is equivalent to a flow entry.
Number of bytes	Number of bytes that have matched a filter term. A filter term is equivalent to a flow entry.

Sample Output

show openflow filters

```
user@host> show openflow filters
```

Switch Name	Filter Index	Number of terms	Number of priorities	Number of packets
OFswitch1	96468992	0	0	0
	96468993	0	0	0
	96468994	0	0	0
	96468995	0	0	0
	96468996	1	1	7928017621

show openflow filters interface

```
user@host> show openflow filters interface ge-1/1/7.0
```

```
Switch Name: OFswitch1
```

```
Filter name: ge-1/1/7.0_0
```

```
Filter index: 96468996
```

```
Number of terms: 1
```

```
Number of priorities: 1
```

```
Term name: ge-1/1/7.0_0:32766^OF:1
```

```
Priority ID: 32766
```

```
Flow ID: 16842752
```

```
Number of packets: 7941332819
```

```
Number of bytes: 476479969140
```

show openflow filters switch

```
user@host> show openflow filters switch OFswitch1
```

```
Switch Name: OFswitch1
```

```
Number of filters: 5
```

```
Default action: PACKET IN
```

```
Filter name: ge-1/1/0.0_0
```

```
Filter index: 96468992
```

Number of terms: 0	Number of priorities: 0		
Filter name: ge-1/1/1.0_0			
Filter index: 96468993			
Number of terms: 0	Number of priorities: 0		
Filter name: ge-1/1/2.0_0			
Filter index: 96468994			
Number of terms: 0	Number of priorities: 0		
Filter name: ge-1/1/3.0_0			
Filter index: 96468995			
Number of terms: 0	Number of priorities: 0		
Filter name: ge-1/1/7.0_0			
Filter index: 96468996			
Number of terms: 1	Number of priorities: 1		
Priority Flow	Number of	Number of	
ID ID	packets	bytes	
32768 16842752	7941332819	476479969140	

show openflow flows

Syntax	show openflow flows <brief detail summary> <flow-id> <switch switch-name>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display information about traffic flows that match filters on OpenFlow interfaces.
Options	<p>none—(Same as brief) Display information for all flows.</p> <p>brief detail summary—(Optional) Display the specified level of output.</p> <p>flow-id—(Optional) Display information only for the specified flow.</p> <p>switch switch-name—(Optional) Display information only for the flows on the specified OpenFlow virtual switch.</p>
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • OpenFlow Support on Devices Running Junos OS on page 3
List of Sample Output	show openflow flows switch brief on page 111 show openflow flows switch detail on page 111 show openflow flows switch detail (OpenFlow 1.3.1, IPv6 Flow) on page 112 show openflow flows switch summary on page 112 show openflow flows brief (Specific Flow) on page 112 show openflow flows detail (Specific Flow) on page 112 show openflow flows detail (Specific Flow, OpenFlow 1.3.1, IPv6 Flow) on page 113 show openflow flows summary (Specific Flow) on page 113
Output Fields	<p>Table 40 on page 110 lists the output fields for the show openflow flows command. Output fields are listed in the approximate order in which they appear.</p>

Table 40: show openflow flows Output Fields

Field Name	Field Description
Switch Name	User-configured identifier for the OpenFlow virtual switch on which the flow resides.
Number of flows	Number of active flow entries associated with that OpenFlow virtual switch.
Flow name	Flow descriptor.

Table 40: show openflow flows Output Fields (*continued*)

Field Name	Field Description
Table ID	Identifier for the flow table from which the flow originated.
Flow ID	Flow identifier associated with that flow entry.
Number of packets	Number of packets that have matched the flow entry.
Priority	Flow entry priority. Packets match higher priority entries before matching lower priority entries.
Idle timeout	Number of seconds after which the flow entry is removed from the flow table provided there are no matching packets.
Hard timeout	Number of seconds after which the flow entry is removed from the flow table regardless of the number of matching packets.
Cookie	An identifier, which is specified by the OpenFlow controller when the flow is installed in the flow table. Cookies are used to filter flows for flow modification and delete operations. NOTE: This field appears only if the device running Junos OS supports OpenFlow version 1.3.1 or later.
Match	Configured match conditions against which the incoming packet is compared. NOTE: In the OpenFlow 1.3.1 sample output, the match fields that are populated for an IPv6 flow apply to MX Series routers only.
Action	Set of actions (for OpenFlow v1.0) or flow instructions (for OpenFlow v1.3.1) applied to a packet when it matches the flow entry.
Number of match	Number of match conditions against which the incoming packet is compared.
Number of action	Number of actions (for OpenFlow v1.0) or flow instructions (for OpenFlow v1.3.1) that are applied to a packet when it matches the flow entry.

Sample Output

show openflow flows switch brief

```
user@host> show openflow flows switch OFswitch1 brief
```

Switch Name	Flow ID	Number of packets	Priority	Number of match	Number of action
OFswitch1	16842752	8075372509	32768	1	1

show openflow flows switch detail

```
user@host> show openflow flows switch OFswitch1 detail
```

```
Flow name: flow-16842752
Table ID: 1      Flow ID: 16842752
Priority: 32768  Idle timeout(in sec):0      Hard timeout(in sec): 0
Cookie: 0
```

```

Match: Input port: 45549
      Ethernet src addr: wildcard
      Ethernet dst addr: wildcard
      Input vlan id: wildcard          Input VLAN priority: wildcard
      Ether type: wildcard
      IP ToS: wildcard                IP protocol: wildcard
      IP src addr: wildcard            IP dst addr: wildcard
      Source port: wildcard            Destination port: wildcard
Action: Output port 41350,

```

show openflow flows switch detail (OpenFlow 1.3.1, IPv6 Flow)

```

user@host> show openflow flows switch OFswitch1 detail
Flow name: flow-67174400
Table ID: 1      Flow ID: 67174400
Priority: 8      Idle timeout(in sec):1800      Hard timeout(in sec): 1800
Cookie: 3333
Match: Input port: 2
      Ethernet src addr: aa:bb:cc:11:22:33
      Ethernet dst addr: aa:bb:cc:11:22:34
      Input vlan id: 50          Input VLAN priority: 3
      Ether type: 0x86dd
      IP ToS: 0x2                IP protocol: 0x6
      IPv4 src addr: NA
      IPv4 dst addr: NA
      IPv6 src addr: 2001::/64
      IPv6 dst addr: 1001::1/128
      Source port: 8              Destination port: 9
Action: Set_Field[VLAN_ID] 601, Output port 4, Set_Field[VLAN_ID] 701, Output
port 6,

```

show openflow flows switch summary

```

user@host> show openflow flows switch OFswitch1 summary

Switch Name                      Number of Flows
OFswitch1                        1

```

show openflow flows brief (Specific Flow)

```

user@host> show openflow flows 16842752 brief

Switch      Flow      Number of packets      Priority Number of Number of
Name        ID        ID                        match    action
OFswitch1  16842752  8056139439              32768    1         1

```

show openflow flows detail (Specific Flow)

```

user@host> show openflow flows 16842752 detail
Flow name: flow-16842752
Table ID: 1      Flow ID: 16842752
Priority: 32768  Idle timeout(in sec):0      Hard timeout(in sec): 0
Cookie: 0
Match: Input port: 45549
      Ethernet src addr: wildcard
      Ethernet dst addr: wildcard
      Input vlan id: wildcard          Input VLAN priority: wildcard
      Ether type: wildcard
      IP ToS: wildcard                IP protocol: wildcard
      IP src addr: wildcard            IP dst addr: wildcard
      Source port: wildcard            Destination port: wildcard
Action: Output port 41350,

```

show openflow flows detail (Specific Flow, OpenFlow 1.3.1, IPv6 Flow)

```
user@host> show openflow flows 67174400 detail
Flow name: flow-67174400
Table ID: 1      Flow ID: 67174400
Priority: 8      Idle timeout(in sec):1800      Hard timeout(in sec): 1800
Cookie: 3333
Match: Input port: 2
      Ethernet src addr: aa:bb:cc:11:22:33
      Ethernet dst addr: aa:bb:cc:11:22:34
      Input vlan id: 50      Input VLAN priority: 3
      Ether type: 0x86dd
      IP ToS: 0x2      IP protocol: 0x6
      IPv4 src addr: NA
      IPv4 dst addr: NA
      IPv6 src addr: 2001::/64
      IPv6 dst addr: 1001::1/128
      Source port: 8      Destination port: 9
Action: Set_Field[VLAN_ID] 601, Output port 4, Set_Field[VLAN_ID] 701, Output
port 6,
```

show openflow flows summary (Specific Flow)

```
user@host> show openflow flows 16842752 summary
Flow name: flow-16842752
Number of packets: 8066495711
```

show openflow groups

Syntax	show openflow groups <brief details summary> <group-id>
Release Information	Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches. Command introduced in Junos OS Release 14.2. Command introduced in Junos OS Release 14.2 for EX Series switches.
Description	Display information about OpenFlow groups. Groups are supported only on Juniper Networks devices running OpenFlow v1.3.1 or later.
Options	none —Display information for all groups. brief detail summary —(Optional) Display the specified level of output. group-id —(Optional) Display information about the specified group only.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • Understanding How the OpenFlow Group Action Works on page 18 • OpenFlow Operational Mode Commands on page 95 • show openflow statistics groups on page 124
List of Sample Output	show openflow groups on page 115 show openflow groups brief on page 115 show openflow groups detail on page 115 show openflow groups summary on page 116 show openflow groups (Specific Group) on page 116 show openflow groups brief (Specific Group) on page 116 show openflow groups detail (Specific Group) on page 116 show openflow groups summary (Specific Group) on page 116
Output Fields	Table 41 on page 114 describes the output fields for the show openflow groups command. Table 41 on page 114 lists the output fields in the approximate order in which they are displayed in the sample output.

Table 41: show openflow groups Output Fields

Field Name	Field Description
Group ID	Unique identifier assigned to a group by the OpenFlow controller.
Type	Group type, which can be either All or Indirect.
Number of Buckets	Number of buckets for a particular group. A group can have 0 to 32 buckets.

Table 41: show openflow groups Output Fields (*continued*)

Field Name	Field Description
Number of Flow Reference	Number of flow entries that point to a particular group.
Bucket	Information about each bucket for a particular group.
Actions	Set of action(s) applied to a packet when it matches the flow entry.
Switch Name	User-configured identifier for the OpenFlow virtual switch on which the flow resides.
Number of Groups	Number of groups that currently exist in the OpenFlow virtual switch.
Flow	Identifier associated with a particular flow entry.

Sample Output

show openflow groups

```
user@host> show openflow groups
```

Group ID	Type	Number of Buckets	Number of Flow Reference
50	All	2	1
51	All	2	1
60	Indirect	1	0

show openflow groups brief

```
user@host> show openflow groups brief
```

Group ID	Type	Number of Buckets	Number of Flow Reference
50	All	2	1
51	All	2	1
60	Indirect	1	0

show openflow groups detail

```
user@host> show openflow groups detail
```

```

Group Id: 50                                Type: All
Bucket Bucket 1
  Actions: VLAN ID 2022, Output port 2,
Bucket Bucket 2
  Actions: VLAN ID 3022, Output port 4,

Group Id: 51                                Type: All
Bucket Bucket 3
  Actions: VLAN ID 2001, Output port 1,
Bucket Bucket 4
  Actions: VLAN ID 3001, Output port 3,

Group Id: 60                                Type: Indirect
Bucket Bucket 5
  Actions: VLAN ID 2060, Output port 3,
```

show openflow groups summary

```
user@host> show openflow groups summary
```

Switch Name	Number of Groups
OF-ex92k	3

show openflow groups (Specific Group)

```
user@host> show openflow groups 50
```

Group ID	Type	Number of Buckets	Number of Flow Reference
50	All	2	1

show openflow groups brief (Specific Group)

```
user@host> show openflow groups 50 brief
```

Group ID	Type	Number of Buckets	Number of Flow Reference
50	All	2	1

show openflow groups detail (Specific Group)

```
user@host> show openflow groups 50 detail
```

```
Group Id: 50                                Type: All
Bucket 1
    Actions: VLAN ID 2022, Output port 2,
Bucket 2
    Actions: VLAN ID 3022, Output port 4,
Flow 570710622208
```

show openflow groups summary (Specific Group)

```
user@host> show openflow groups 50 summary
```

Group ID	Type	Number of Buckets	Number of Flow Reference
50	All	2	1

show openflow interfaces

Syntax	show openflow interfaces <interface-name> <switch switch-name>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display physical characteristics and status information for interfaces participating in OpenFlow.
Options	none —Display information for all interfaces participating in OpenFlow. interface-name —(Optional) Display information only for the specified interface. Specify the interface name including the logical unit number—for example, ge-1/1/0.0. switch switch-name —(Optional) Display information only for those interfaces configured under the specified OpenFlow virtual switch.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • show openflow filters on page 107 • show openflow flows on page 110 • show openflow statistics interfaces on page 127
List of Sample Output	show openflow interfaces on page 118 show openflow interfaces (Specific Interface) on page 119 show openflow interfaces switch on page 119
Output Fields	Table 42 on page 117 lists the output fields for the show openflow interfaces command. Output fields are listed in the approximate order in which they appear.

Table 42: show openflow interfaces Output Fields

Field Name	Field Description
Switch name	User-configured identifier for the OpenFlow virtual switch to which the interface is bound.
Interface Name	Name of the logical interface.
Interface port number	Port identifier associated with the OpenFlow interface.
Interface Hardware Address	Media access control (MAC) address of the interface.

Table 42: show openflow interfaces Output Fields (*continued*)

Field Name	Field Description
Interface speed	Speed and duplex mode of the interface.
Interface Auto-Negotiation	Autonegotiation status: Enabled or Disabled .
Interface media type	Media type of the interface. For example, copper or fiber.
Interface state	Current state of the interface.

Sample Output

show openflow interfaces

```

user@host> show openflow interfaces
Switch name: OFswitch1
Interface Name: ge-1/1/2.0
Interface port number: 41507
Interface Hardware Address: 00:00:5e:00:53:b4
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

Switch name: OFswitch1
Interface Name: ge-1/1/3.0
Interface port number: 44383
Interface Hardware Address: 00:00:5e:00:53:b5
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

Switch name: OFswitch1
Interface Name: ge-1/1/1.0
Interface port number: 41350
Interface Hardware Address: 00:00:5e:00:53:b7
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

Switch name: OFswitch1
Interface Name: ge-1/1/7.0
Interface port number: 45549
Interface Hardware Address: 00:00:5e:00:53:b6
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

Switch name: OFswitch1
Interface Name: ge-1/1/0.0
Interface port number: 44538
Interface Hardware Address: 00:00:5e:00:53:b2

```

```

Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

```

show openflow interfaces (Specific Interface)

```

user@host> show openflow interfaces ge-1/1/0.0
Switch name: OFswitch1
Interface Name: ge-1/1/0.0
Interface port number: 44538
Interface Hardware Address: 00:00:5e:00:53:b2
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

```

show openflow interfaces switch

```

user@host> show openflow interfaces switch OFswitch1
Switch name: OFswitch1
Interface Name: ge-1/1/2.0
Interface port number: 41507
Interface Hardware Address: 00:00:5e:00:53:b4
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

```

```

Switch name: OFswitch1
Interface Name: ge-1/1/3.0
Interface port number: 44383
Interface Hardware Address: 00:00:5e:00:53:b5
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

```

```

Switch name: OFswitch1
Interface Name: ge-1/1/1.0
Interface port number: 41350
Interface Hardware Address: 00:00:5e:00:53:b7
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

```

```

Switch name: OFswitch1
Interface Name: ge-1/1/7.0
Interface port number: 45549
Interface Hardware Address: 00:00:5e:00:53:b6
Interface speed: 1Gb Full-duplex
Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

```

```

Switch name: OFswitch1
Interface Name: ge-1/1/0.0
Interface port number: 44538
Interface Hardware Address: 00:00:5e:00:53:b2
Interface speed: 1Gb Full-duplex

```

Interface Auto-Negotiation: Enabled
Interface media type: Fiber
Interface state: Up

show openflow statistics flows

Syntax	show openflow statistics flows <flow-id> <switch switch-name>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display statistics for OpenFlow flows.
Options	none —Display flow statistics for all flows for all OpenFlow virtual switches. flow-id —(Optional) Display flow statistics only for the specified flow. switch switch-name —(Optional) Display flow statistics only for the specified OpenFlow virtual switch.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • show openflow flows on page 110 • show openflow statistics interfaces on page 127 • show openflow statistics packet on page 130 • show openflow statistics tables on page 137
List of Sample Output	show openflow statistics flows on page 122 show openflow statistics flows (OpenFlow 1.3.1) on page 122 show openflow statistics flows (Specific Flow) on page 122 show openflow statistics flows (Specific Flow, OpenFlow 1.3.1) on page 123 show openflow statistics flows switch on page 123 show openflow statistics flows switch (OpenFlow 1.3.1) on page 123
Output Fields	Table 43 on page 121 lists the output fields for the show openflow statistics flows command. Output fields are listed in the approximate order in which they appear.

Table 43: show openflow statistics flows Output Fields

Field Name	Field Description
Switch Name	User-configured identifier for the OpenFlow virtual switch on which the flow resides.
Table ID	Identifier for the flow table from which the flow originated.
Flow ID	OpenFlow flow entry identifier.

Table 43: show openflow statistics flows Output Fields (*continued*)

Field Name	Field Description
Duration(in sec)	Number of seconds the flow has been active.
Duration(in nsec)	Number of nanoseconds the flow has been active beyond the value of Duration(in sec) .
Priority	Flow entry priority. Packets match higher priority entries before matching lower priority entries.
Idle timeout	Number of seconds after which the flow entry is removed from the flow table provided there are no matching packets.
Hard timeout	Number of seconds after which the flow entry is removed from the flow table regardless of the number of matching packets.
Number of packets	Number of packets that have matched the flow entry.
Number of bytes	Number of bytes that have matched the flow entry.
Match	Fields against which the incoming packet is compared.
Action	Set of actions applied to a packet when it matches the flow entry.

Sample Output

show openflow statistics flows

```

user@host> show openflow statistics flows
Switch Name: OFswitch1
Table ID: 1      Flow ID: 16842752
Duration(in sec): 58772      Duration(in nsec): 215702000
Priority: 32768  Idle timeout(in sec):0      Hard timeout(in sec): 0
Number of packets: 8745275026
Number of bytes: 524716501560
Match: IN_PORT,
Action: OUTPUT,

```

show openflow statistics flows (OpenFlow 1.3.1)

```

user@host> show openflow statistics flows
Switch Name: 100
Table ID: 1      Flow ID: 67174400
Duration(in sec): 51539      Duration(in nsec): 3961483296
Priority: 1000  Idle timeout(in sec):0      Hard timeout(in sec): 0
Number of packets: 179965839
Number of bytes: 14757198798
Match: IN_PORT, DL_VLAN, DL_TYPE, IPv6_SRC, IPv6_DST,
Action: SET_FIELD[VLAN_ID], OUTPUT,

```

show openflow statistics flows (Specific Flow)

```

user@host> show openflow statistics flows 16842752

```

```

Switch Name: OFswitch1
Table ID: 1      Flow ID: 16842752
Duration(in sec): 58803      Duration(in nsec): 4127548296
Priority: 32768  Idle timeout(in sec):0      Hard timeout(in sec): 0
Number of packets: 8749713419
Number of bytes:  524982805140
Match: IN_PORT,
Action: OUTPUT,

```

show openflow statistics flows (Specific Flow, OpenFlow 1.3.1)

```

user@host> show openflow statistics flows 67174400
Switch Name: 100
Table ID: 1      Flow ID: 67174400
Duration(in sec): 51539      Duration(in nsec): 3961483296
Priority: 1000  Idle timeout(in sec):0      Hard timeout(in sec): 0
Number of packets: 179965839
Number of bytes:  14757198798
Match: IN_PORT, DL_VLAN, DL_TYPE, IPv6_SRC, IPv6_DST,
Action: SET_FIELD[VLAN_ID], OUTPUT,

```

show openflow statistics flows switch

```

user@host> show openflow statistics flows switch OFswitch1
Switch Name: OFswitch1
Table ID: 1      Flow ID: 16842752
Duration(in sec): 58829      Duration(in nsec): 4124448296
Priority: 32768  Idle timeout(in sec):0      Hard timeout(in sec): 0
Number of packets: 8752672358
Number of bytes:  525160341480
Match: IN_PORT,
Action: OUTPUT,

```

show openflow statistics flows switch (OpenFlow 1.3.1)

```

user@host> show openflow statistics flows switch 100
Switch Name: 100
Table ID: 1      Flow ID: 67174400
Duration(in sec): 51539      Duration(in nsec): 3961483296
Priority: 1000  Idle timeout(in sec):0      Hard timeout(in sec): 0
Number of packets: 179965839
Number of bytes:  14757198798
Match: IN_PORT, DL_VLAN, DL_TYPE, IPv6_SRC, IPv6_DST,
Action: SET_FIELD[VLAN_ID], OUTPUT,

```

show openflow statistics groups

Syntax	show openflow statistics groups <group-id>
Release Information	Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches. Command introduced in Junos OS Release 14.2. Command introduced in Junos OS Release 14.2 for EX Series switches.
Description	Display statistics for OpenFlow groups. Groups are supported only on Juniper Networks devices running OpenFlow v1.3.1 or later.
Options	none —Display statistics for all groups defined on all OpenFlow virtual switches. group-id —(Optional) Display statistics only for the specified group.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • Understanding How the OpenFlow Group Action Works on page 18 • OpenFlow Operational Mode Commands on page 95 • show openflow groups on page 114
List of Sample Output	show openflow statistics group on page 125 show openflow statistics group (Specific Group) on page 125
Output Fields	Table 44 on page 124 lists the output fields for the show openflow statistics groups command. Output fields are listed in the approximate order in which they appear.

Table 44: show openflow statistics groups Output Fields

Field	Description
Switch Name	User-configured identifier for the OpenFlow virtual switch in which the groups resides.
Group ID	Unique identifier assigned to the group by the OpenFlow controller.
Ref Count	Number of flow entries that reference the group.
Number of packets (group)	Number of packets handled by the group.
Number of bytes (group)	Number of bytes handled by the group.
Duration(in sec)	Number of seconds the group has been active.
Duration(in nsec)	Number of nanoseconds the group has been active beyond the Duration(in sec)
Bucket <i>number</i>	Statistics for a particular bucket.

Table 44: show openflow statistics groups Output Fields (*continued*)

Field	Description
Number of packets (bucket)	Number of packets handled by a bucket in the group.
Number of bytes (bucket)	Number of bytes handled by a bucket in the group.

For a group with the group type of all, the values specified in the **Number of packets** (group) and **Number of bytes** (group) fields are usually the same as those specified in the **Number of packets** (bucket) and **Number of bytes** (bucket) fields because all buckets in the group are executed.

Sample Output

show openflow statistics group

```

user@host> show openflow statistics groups

Switch Name: OF-ex92k
Group ID: 50                      Ref Count: 1
Number of packets: 62161
Number of bytes: 7956608
Duration(in sec): 22687           Duration(in nsec): 4255381296
  Bucket 0
    Number of packets: 62161
    Number of bytes: 7956608
  Bucket 1
    Number of packets: 62161
    Number of bytes: 7956608

Switch Name: OF-ex92k
Group ID: 51                      Ref Count: 1
Number of packets: 0
Number of bytes: 0
Duration(in sec): 22673           Duration(in nsec): 8549000
  Bucket 0
    Number of packets: 0
    Number of bytes: 0
  Bucket 1
    Number of packets: 0
    Number of bytes: 0
...

```

show openflow statistics group (Specific Group)

```

user@host> show openflow statistics groups 50

Switch Name: OF-ex92k
Group ID: 50                      Ref Count: 1
Number of packets: 64886
Number of bytes: 8305408
Duration(in sec): 22789           Duration(in nsec): 586200000
  Bucket 0
    Number of packets: 64886
    Number of bytes: 8305408
  Bucket 1

```

Number of packets: 64886
Number of bytes: 8305408

show openflow statistics interfaces

Syntax	show openflow statistics interfaces <switch switch-name>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display statistics for interfaces participating in OpenFlow.
Options	none —Display statistics for all interfaces participating in OpenFlow for all configured OpenFlow virtual switches. switch switch-name —(Optional) Display statistics only for those interfaces on the specified OpenFlow virtual switch.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • show openflow interfaces on page 117 • show openflow statistics flows on page 121 • show openflow statistics tables on page 137
List of Sample Output	show openflow statistics interfaces on page 128

Output Fields [Table 45 on page 127](#) lists the output fields for the **show openflow statistics interfaces** command. Output fields are listed in the approximate order in which they appear.

Table 45: show openflow statistics interfaces Output Fields

Field Name	Field Description
Switch Name	User-configured identifier for the OpenFlow virtual switch to which the interface is bound.
Interface Name	Name of the logical interface.
Port Number	Port identifier associated with the OpenFlow interface.
Num of rx pkts	Number of packets received on the OpenFlow interface.
Num of tx pkts	Number of packets transmitted on the OpenFlow interface.
Num of rx bytes	Number of bytes received on the OpenFlow interface.
Num of tx bytes	Number of bytes transmitted on the OpenFlow interface.

Table 45: show openflow statistics interfaces Output Fields (*continued*)

Field Name	Field Description
Num of rx error	Number of receive errors.
Num of tx error	Number of transmit errors.
Number of packets dropped by RX	Number of packets dropped by the ingress interface.
Number of packets dropped by TX	Number of packets dropped by the egress interface.
Number of rx frame error	Number of packets with frame alignment errors.
Number of rx overrun error	Number of packets with RX overrun.
Number of CRC error	Number of CRC errors.
Number of collisions	Number of Ethernet collisions.

Sample Output

show openflow statistics interfaces

```

user@host> show openflow statistics interfaces
Switch Name: OFswitch1
Interface Name: ge-1/1/2.0      Port Number: 41507
Num of rx pkts: 0                Num of tx pkts: 1372301
Num of rx bytes: 0              Num of tx bytes: 88665532
Num of rx error: 0              Num of tx error:0
Number of packets dropped by RX: 0
Number of packets dropped by TX: 0
Number of rx frame error:      0
Number of rx overrun error:    0
Number of CRC error:           0
Number of collisions:          0

Switch Name: OFswitch1
Interface Name: ge-1/1/3.0      Port Number: 44383
Num of rx pkts: 0                Num of tx pkts: 1372285
Num of rx bytes: 0              Num of tx bytes: 88664476
Num of rx error: 0              Num of tx error:0
Number of packets dropped by RX: 0
Number of packets dropped by TX: 0
Number of rx frame error:      0
Number of rx overrun error:    0
Number of CRC error:           0
Number of collisions:          0

Switch Name: OFswitch1
Interface Name: ge-1/1/1.0      Port Number: 41350

```

Num of rx pkts: 0	Num of tx pkts: 8776241344
Num of rx bytes: 0	Num of tx bytes: 526580807026
Num of rx error: 0	Num of tx error: 0
Number of packets dropped by RX: 0	
Number of packets dropped by TX: 0	
Number of rx frame error: 0	
Number of rx overrun error: 0	
Number of CRC error: 0	
Number of collisions: 0	

Switch Name: OFswitch1

Interface Name: ge-1/1/7.0

Port Number: 45549

Num of rx pkts: 8840952127

Num of tx pkts: 1047701

Num of rx bytes: 530457127620

Num of tx bytes: 69187816

Num of rx error: 0

Num of tx error: 0

Number of packets dropped by RX: 0

Number of packets dropped by TX: 0

Number of rx frame error: 0

Number of rx overrun error: 0

Number of CRC error: 0

Number of collisions: 0

Switch Name: OFswitch1

Interface Name: ge-1/1/0.0

Port Number: 44538

Num of rx pkts: 0

Num of tx pkts: 1372031

Num of rx bytes: 0

Num of tx bytes: 88647712

Num of rx error: 0

Num of tx error: 0

Number of packets dropped by RX: 0

Number of packets dropped by TX: 0

Number of rx frame error: 0

Number of rx overrun error: 0

Number of CRC error: 0

Number of collisions: 0

show openflow statistics packet

Syntax	show openflow statistics packet (in out) <switch switch-name>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display statistics for packet-in and packet-out (send-packet) actions.
Options	none —Display statistics for all OpenFlow virtual switches. switch switch-name —(Optional) Display statistics only for the specified OpenFlow virtual switch.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95
List of Sample Output	show openflow statistics packet in on page 130 show openflow statistics packet out on page 131 show openflow statistics packet out switch on page 131
Output Fields	Table 46 on page 130 lists the output fields for the show openflow statistics packet command. Output fields are listed in the approximate order in which they appear.

Table 46: show openflow statistics packet Output Fields

Field Name	Field Description
Switch Name	User-configured identifier for the OpenFlow virtual switch.
Rx packets	Number of packets received by the OpenFlow virtual switch that have been sent to the OpenFlow controller. The switch includes the packet in the data portion of an OFPT_PACKET_IN message.
Tx packets	Number of packets sent by the OpenFlow controller to an egress interface. The controller includes the packet in the data portion of an OFPT_PACKET_OUT message.
Drop packets	Number of dropped packets.

Sample Output

show openflow statistics packet in

```
user@host> show openflow statistics packet in
```

Openflow packet-in statistics information:

Switch Name	Rx packets	Drop packets
OFswitch1	1044137	0

show openflow statistics packet out

user@host> show openflow statistics packet out

Openflow packet-out statistics information:

Switch Name	Tx packets	Drop packets
OFswitch1	5260759	0

show openflow statistics packet out switch

user@host> show openflow statistics packet out switch OFswitch1

Openflow packet-out statistics information:

Switch Name	Tx packets	Drop packets
OFswitch1	5260759	0

show openflow statistics queue

Syntax	show openflow statistics queue <interface <i>interface-name</i>>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display statistics for hardware queues for interfaces participating in OpenFlow.
Options	none —Display queue statistics for all interfaces participating in OpenFlow. interface <i>interface-name</i> —(Optional) Display queue statistics only for the specified interface. Specify the interface name including the logical unit number—for example, ge-1/1/0.0
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • show openflow statistics flows on page 121 • show openflow statistics tables on page 137
List of Sample Output	show openflow statistics queue on page 133 show openflow statistics queue interface on page 133
Output Fields	Table 47 on page 132 lists the output fields for the show openflow statistics queue command. Output fields are listed in the approximate order in which they appear.

Table 47: show openflow statistics queue Output Fields

Field Name	Field Description
Switch Name	User-configured identifier for the OpenFlow virtual switch.
Port No	Port identifier associated with the OpenFlow interface.
Queue Id	Priority queue identifier.
TX bytes	Number of bytes transmitted through the queue.
TX packets	Number of packets transmitted through the queue.
Tx errors	Number of packets dropped by the queue due to overrun.

Sample Output

show openflow statistics queue

```

user@host> show openflow statistics queue
Openflow queue statistics information:
Switch Name      Port No Queue Id  TX bytes    TX packets  Tx errors
OFswitch1        41507  0      115327076    1372459     0
OFswitch1        41507  1        0           0           0
OFswitch1        41507  2        0           0           0
OFswitch1        41507  3        0           0           0
OFswitch1        41507  4        0           0           0
OFswitch1        41507  5        0           0           0
OFswitch1        41507  6        0           0           0
OFswitch1        41507  7        0           0           0
OFswitch1        44383  0      115325732    1372443     0
OFswitch1        44383  1        0           0           0
OFswitch1        44383  2        0           0           0
OFswitch1        44383  3        0           0           0
OFswitch1        44383  4        0           0           0
OFswitch1        44383  5        0           0           0
OFswitch1        44383  6        0           0           0
OFswitch1        44383  7        0           0           0
OFswitch1        41350  0      752072717540 8953246155  0
OFswitch1        41350  1        0           0           0
OFswitch1        41350  2        0           0           0
OFswitch1        41350  3        0           0           0
OFswitch1        41350  4        0           0           0
OFswitch1        41350  5        0           0           0
OFswitch1        41350  6        0           0           0
OFswitch1        41350  7        0           0           0
OFswitch1        45549  0      88060496     1047859     0
OFswitch1        45549  1        0           0           0
OFswitch1        45549  2        0           0           0
OFswitch1        45549  3        0           0           0
OFswitch1        45549  4        0           0           0
OFswitch1        45549  5        0           0           0
OFswitch1        45549  6        0           0           0
OFswitch1        45549  7        0           0           0
OFswitch1        44538  0      115304396    1372189     0
OFswitch1        44538  1        0           0           0
OFswitch1        44538  2        0           0           0
OFswitch1        44538  3        0           0           0
OFswitch1        44538  4        0           0           0
OFswitch1        44538  5        0           0           0
OFswitch1        44538  6        0           0           0
OFswitch1        44538  7        0           0           0

```

show openflow statistics queue interface

```

user@host> show openflow statistics queue interface ge-1/1/2.0
Openflow queue statistics information:
Switch Name      Port No Queue Id  TX bytes    TX packets  Tx errors
OFswitch1        41507  0      115327076    1372459     0
OFswitch1        41507  1        0           0           0
OFswitch1        41507  2        0           0           0
OFswitch1        41507  3        0           0           0
OFswitch1        41507  4        0           0           0
OFswitch1        41507  5        0           0           0
OFswitch1        41507  6        0           0           0
OFswitch1        41507  7        0           0           0

```


show openflow statistics summary

Syntax	show openflow statistics summary
Release Information	<p>Command introduced in Junos OS Release 13.3.</p> <p>Command introduced in Junos OS Release 13.3 for EX Series switches.</p> <p>Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.</p>
Description	Display summary statistics for all installed OpenFlow flow entries for all OpenFlow virtual switches.
Options	This command has no options.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • show openflow statistics flows on page 121 • show openflow statistics tables on page 137 • show openflow summary on page 140
List of Sample Output	show openflow statistics summary on page 136
Output Fields	<p>Table 48 on page 135 lists the output fields for the show openflow statistics summary command. Output fields are listed in the approximate order in which they appear.</p>

Table 48: show openflow statistics summary Output Fields

Field Name	Field Description
Switch Name	User-configured identifier for the OpenFlow virtual switch.
Port Number	Port identifier associated with the OpenFlow interface.
Number of RX packets	Number of packets received on the OpenFlow interface.
Number of TX packets	Number of packets transmitted on the OpenFlow interface.
Num of packets dropped by RX	Number of packets dropped by the ingress interface.
Flow ID	Flow identifier associated with that flow entry.
Number of packets	Number of packets that have matched the flow entry.
Duration (in sec)	Number of seconds the flow has been active.

Table 48: show openflow statistics summary Output Fields (*continued*)

Field Name	Field Description
Priority	Flow entry priority. Packets match higher priority entries before matching lower priority entries.
Idle Timeout	Number of seconds after which the flow entry is removed from the flow table provided there are no matching packets.
Hard Timeout	Number of seconds after which the flow entry is removed from the flow table regardless of the number of matching packets.

Sample Output

show openflow statistics summary

```
user@host> show openflow statistics summary
```

Switch Name	Port Number	Number of RX packets	Number of TX packets	Num of packets dropped by RX
OFswitch1	41507	0	1372609	0
OFswitch1	44383	0	1372593	0
OFswitch1	41350	0	9119477900	0
OFswitch1	45549	9184188377	1048009	0
OFswitch1	44538	0	1372339	0

Switch Name	Flow ID	Number of packets	Duration (in sec)	Priority	Idle Timeout	Hard Timeout
OFswitch1	16842752	9117212928	61278	32768	0	0

show openflow statistics tables

Syntax	show openflow statistics tables <switch switch-name>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display statistics for OpenFlow flow tables.
Options	none —Display statistics for flow tables on all OpenFlow virtual switches. switch switch-name —(Optional) Display statistics only for flow tables on the specified OpenFlow virtual switch.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • show openflow statistics flows on page 121 • show openflow statistics interfaces on page 127 • show openflow statistics summary on page 135
List of Sample Output	show openflow statistics tables on page 138 show openflow statistics tables (OpenFlow 1.3.1) on page 138 show openflow statistics tables switch on page 138 show openflow statistics tables switch (OpenFlow 1.3.1) on page 139
Output Fields	Table 49 on page 137 lists the output fields for the show openflow statistics tables command. Output fields are listed in the approximate order in which they appear.

Table 49: show openflow statistics tables Output Fields

Field Name	Field Description
Table Name	String identifier for the OpenFlow flow table.
Table id	Numeric identifier for the OpenFlow flow table.
Supported wildcards	Wildcards supported by the flow table.
Max number of entries	Maximum number of entries supported in the flow table.
Number of active entries	Number of active entries in the flow table.

Table 49: show openflow statistics tables Output Fields (*continued*)

Field Name	Field Description
Number of idle timeout entries	Number of entries in the flow table that have been removed because the idle timeout expired and no packets matched those entries.
Number of hard timeout entries	Number of entries in the flow table that have been removed because the hard timeout expired.
Number of flow delete entries	Number of entries in the flow table that have been removed in response to controller requests.
Number of flow add entries	Number of entries in the flow table that have been added in response to controller requests.
Number of flow modify entries	Number of entries in the flow table that have been modified in response to controller requests.
Number of total delete entries	Number of entries in the flow table that have been removed for any reason.

Sample Output

show openflow statistics tables

```

user@host> show openflow statistics tables
Table name: Default flow table           Table id:1
Supported wildcards: IN_PORT, DL_VLAN, DL_SRC, DL_DST, DL_TYPE, NW_PROTO, TP_SRC,
TP_DST, NW_SRC, NW_DST, DL_VLAN_PCP, NW_TOS,
Max number of entries: 65535             Number of active entries: 1
Number of idle timeout entries: 0
Number of hard timeout entries: 0
Number of flow delete entries: 0
Number of flow add entries: 1
Number of flow modify entries: 0
Number of total delete entries: 0

```

show openflow statistics tables (OpenFlow 1.3.1)

```

user@host> show openflow statistics tables
Table name: Default flow table           Table id:1
Supported wildcards: IN_PORT, DL_VLAN, DL_SRC, DL_DST, DL_TYPE, NW_PROTO, TP_SRC,
TP_DST, IPv4_SRC, IPv4_DST, IPv6_SRC, IPv6_DST, DL_VLAN_PCP, NW_TOS,
Number of active entries: 7
Number of entries used: 0
Number of idle timeout entries: 0
Number of hard timeout entries: 0
Number of flow delete entries: 0
Number of flow add entries: 7
Number of flow modify entries: 0
Number of total delete entries: 0

```

show openflow statistics tables switch

```

user@host> show openflow statistics tables switch OFswitch1

```

```
Table name: Default flow table           Table id:1
Supported wildcards: IN_PORT, DL_VLAN, DL_SRC, DL_DST, DL_TYPE, NW_PROTO, TP_SRC,
TP_DST, NW_SRC, NW_DST, DL_VLAN_PCP, NW_TOS,
Max number of entries: 65535             Number of active entries: 1
Number of idle timeout entries: 0
Number of hard timeout entries: 0
Number of flow delete entries: 0
Number of flow add entries: 1
Number of flow modify entries: 0
Number of total delete entries: 0
```

show openflow statistics tables switch (OpenFlow 1.3.1)

```
user@host> show openflow statistics tables switch 100
Table name: Default flow table           Table id:1
Supported wildcards: IN_PORT, DL_VLAN, DL_SRC, DL_DST, DL_TYPE, NW_PROTO, TP_SRC,
TP_DST, IPv4_SRC, IPv4_DST, IPv6_SRC, IPv6_DST, DL_VLAN_PCP, NW_TOS,
Number of active entries: 7
Number of entries used: 0
Number of idle timeout entries: 0
Number of hard timeout entries: 0
Number of flow delete entries: 0
Number of flow add entries: 7
Number of flow modify entries: 0
Number of total delete entries: 0
```

show openflow summary

Syntax	show openflow summary
Release Information	<p>Command introduced in Junos OS Release 13.3.</p> <p>Command introduced in Junos OS Release 13.3 for EX Series switches.</p> <p>Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.</p>
Description	Display summary information for OpenFlow including the number of configured virtual switches, controllers, interfaces, and flows.
Options	This command has no options.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • show openflow statistics summary on page 135 • show openflow switch on page 141
Output Fields	<p>Table 50 on page 140 lists the output fields for the show openflow summary command. Output fields are listed in the approximate order in which they appear.</p>

Table 50: show openflow summary Output Fields

Field Name	Field Description
Number of switches	Total number of configured OpenFlow virtual switches.
Number of controllers	Total number of configured OpenFlow controllers.
Number of interfaces	Number of logical interfaces participating in OpenFlow.
Number of active flow entries	Number of active entries in the flow table.

Sample Output

show openflow summary

```
user@host> show openflow summary
Number of switches:      1
Number of controllers:   1
Number of interfaces:    5
Number of active flow entries: 1
```

show openflow switch

Syntax	show openflow switch <i><switch-name></i>
Release Information	Command introduced in Junos OS Release 13.3. Command introduced in Junos OS Release 13.3 for EX Series switches. Command introduced in Junos OS Release 14.1X53-D10 for QFX Series switches.
Description	Display OpenFlow message statistics for OpenFlow virtual switches.
Options	none —Display information for all OpenFlow virtual switches. switch <i>switch-name</i> —(Optional) Display information only for the specified OpenFlow virtual switch.
Required Privilege Level	admin
Related Documentation	<ul style="list-style-type: none"> • OpenFlow Operational Mode Commands on page 95 • show openflow statistics tables on page 137 • show openflow summary on page 140
List of Sample Output	show openflow switch on page 142 show openflow switch (Specific OpenFlow Virtual Switch) on page 142
Output Fields	Table 51 on page 141 lists the output fields for the show openflow switch command. Output fields are listed in the approximate order in which they appear.

Table 51: show openflow switch Output Fields

Field Name	Field Description
Switch Name	User-configured identifier for the OpenFlow virtual switch.
Switch ID	Device identifier for the OpenFlow virtual switch.
Switch DPID	Data path ID uniquely identifying the OpenFlow instance. This value is a concatenation of the switch ID for the virtual switch and the management port MAC address.
Flow mod received	Number of Modify Flow Entry messages (OFPT_FLOW_MOD) received from the controller.
Vendor received	Number of messages with vendor-specific extensions.
Packets sent	Number of packets sent to the controller.
Packets received	Number of packets received from the controller.

Table 51: show openflow switch Output Fields (*continued*)

Field Name	Field Description
Echo req sent	Number of Echo Request messages (OFPT_ECHO_REQUEST) sent to the controller.
Echo req received	Number of Echo Request messages (OFPT_ECHO_REQUEST) received from the controller.
Echo reply sent	Number of Echo Reply messages (OFPT_ECHO_REPLY) sent to the controller.
Echo reply received	Number of Echo Reply messages (OFPT_ECHO_REPLY) received from the controller.
Port Status sent	Number of Port Status messages (OFPT_PORT_STATUS) sent to the controller.
Port mod received	Number of Port Modification messages (OFPT_PORT_MOD) received from the controller.
Barrier request	Number of Barrier Request messages (OFPT_BARRIER_REQUEST) received from the controller.
Barrier reply	Number of Barrier Reply messages (OFPT_BARRIER_REPLY) sent to the controller.
Error msg sent	Number of error messages (OFPT_ERROR) sent to the controller.
Error msg received	Number of error messages (OFPT_ERROR) received from the controller.

Sample Output

show openflow switch

```

user@host> show openflow switch
Switch Name:      OFswitch1
Switch ID:        0
Flow mod received: 4
Packets sent:     1048258
Echo req sent:    4115
Echo reply sent:  0
Port Status sent: 1
Barrier request:  0
Error msg sent:   1
Switch DPID:      00:00:00:00:5e:00:53:d0
Vendor received:  0
Packets received: 1089664
Echo req received: 0
Echo reply received: 4115
Port mod received: 0
Barrier reply:    0
Error msg received: 0

```

show openflow switch (Specific OpenFlow Virtual Switch)

```

user@host> show openflow switch OFswitch1
Switch Name:      OFswitch1
Switch ID:        0
Flow mod received: 4
Packets sent:     1048259
Echo req sent:    4116
Echo reply sent:  0
Port Status sent: 1
Switch DPID:      00:00:00:00:5e:00:53:d0
Vendor received:  0
Packets received: 1089675
Echo req received: 0
Echo reply received: 4116
Port mod received: 0

```

Barrier request: 0
Error msg sent: 1

Barrier reply: 0
Error msg received: 0

PART 4

Index

- [Index on page 147](#)

Index

Symbols

#, comments in configuration statements.....	xii
(), in syntax descriptions.....	xii
< >, in syntax descriptions.....	xii
[], in configuration statements.....	xii
{ }, in configuration statements.....	xii
(pipe), in syntax descriptions.....	xii

A

actions	
forwarding.....	9
supported.....	9, 27, 34, 43
supported in send packet messages.....	9, 27, 34
address statement.....	80

B

barrier messages.....	21
braces, in configuration statements.....	xii
brackets	
angle, in syntax descriptions.....	xii
square, in configuration statements.....	xii

C

comments, in configuration statements.....	xii
compliance matrix	
OpenFlow v1.0 support.....	22, 29
OpenFlow v1.3.1 support.....	36
configuration examples	
OpenFlow hybrid interfaces.....	69
OpenFlow support on EX9200 switches.....	54
OpenFlow support on QFX5100 switch.....	61
controller connection.....	13
controller statement.....	81
conventions	
text and syntax.....	xi
curly braces, in configuration statements.....	xii
customer support.....	xiii
contacting JTAC.....	xiii

D

default-action statement.....	82
-------------------------------	----

documentation	
comments on.....	xiii

F

filters	
OpenFlow interfaces.....	16
flows	
forwarding actions.....	9, 27, 34, 43
OpenFlow.....	16
OpenFlow timers.....	19
troubleshooting.....	110
font conventions.....	xi

H

hard timeout.....	19
hybrid interfaces	
configuring.....	67, 69
overview.....	47

I

id statement.....	83
idle timeout.....	19
installing	
OpenFlow.....	51
interfaces	
OpenFlow.....	7
OpenFlow hybrid.....	47, 67, 69
troubleshooting.....	117
interfaces statement.....	84

M

manuals	
comments on.....	xiii
match conditions	
supported.....	25, 32, 40
messages	
barrier reply.....	21
barrier request.....	21
flow modification.....	9, 19
hello.....	13
packet-in.....	130
send packet.....	9, 27, 34, 130
supported.....	23, 29, 36

O

OpenFlow	
actions.....	9, 27, 34, 43
barrier messages.....	21
configuration hierarchy.....	79

configuring EX Series switches.....	59	show openflow statistics interfaces command.....	127
configuring EX9200 switches.....	52, 54	show openflow statistics packet command.....	130
configuring hybrid interfaces.....	67, 69	show openflow statistics queue command.....	132
configuring QFX5100 switch.....	61	show openflow statistics summary command.....	135
controller connection.....	13	show openflow statistics tables command.....	137
features.....	3	show openflow summary command.....	140
filters.....	16	show openflow switch command.....	141
flows.....	16, 19, 110	statistics	
hybrid interfaces.....	47, 67, 69	supported.....	28, 35
installing.....	51	support, technical See technical support	
interfaces.....	7, 16, 47, 117	switch statement.....	90
match conditions.....	25, 32, 40	syntax conventions.....	xi
messages.....	23, 29, 36		
overview.....	7, 9	T	
port numbering.....	40	technical support	
releases.....	3	contacting JTAC.....	xiii
software package.....	3	timers.....	19
statistics.....	28, 35, 141	hard timeout.....	19
support on products.....	3	idle timeout.....	19
supported software standards.....	5	purge-flow-timer.....	19, 88
timers.....	16	traceoptions statement.....	91
hard timeout.....	19		
idle timeout.....	19	V	
purge-flow-timer.....	19, 88	virtual switches	
v1.0 support.....	22, 29	connection to OpenFlow controller.....	13
v1.3.1 support.....	36	OpenFlow.....	7
virtual switches.....	7, 13		
openflow statement.....	85		
OpenFlow Switch Specification v1.0.0.....	5		
OpenFlow Switch Specification v1.3.1.....	5		
P			
parentheses, in syntax descriptions.....	xii		
port numbering			
supported.....	40		
port statement.....	86		
protocol statement.....	87		
purge-flow-timer statement.....	19, 88		
R			
role statement.....	89		
S			
show openflow capability command.....	97		
show openflow controller command.....	104		
show openflow filters command.....	107		
show openflow flows command.....	110		
show openflow interfaces command.....	117		
show openflow statistics flows command.....	121		