Passive Flow Monitoring

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

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Supported Platforms

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

- M Series
- T Series

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.xsl;
       }
     }
   }
   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.xsl; }
   ```

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 *Junos OS CLI User Guide*.

Documentation Conventions

Table 1 on page xi 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.

Table 2 on page xi 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**
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`

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

Convention	Description	Examples
Italic text like this	• Introduces important new terms. • Identifies book names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS System Basics Configuration Guide* • RFC 1997, *BGP Communities Attribute*
Italic text like this	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** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; interface names; configuration hierarchy levels; or labels on routing platform components.	• 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)	Enclose optional keywords or variables.	**stub** <**default-metric** *metric*>**;**
| (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** (***string1*** **|** ***string2*** **|** ***string3***)
# (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)	Enclose a variable for which you can substitute one or more values.	**community name members [** ***community-ids*** **]**

Indention and braces ({ })	Identify a level in the configuration hierarchy.	[edit]
		routing-options {
		  static {
		  route default {
		  nexthop *address*;
		  retain;
		  }
		  }
		}

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
J-Web GUI Conventions		
Bold text like this	Represents J-Web graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.
> (bold right angle bracket)	Separates levels in a hierarchy of J-Web selections.	In the configuration editor hierarchy, select **Protocols>Ospf**.

Documentation Feedback

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- Document or topic name
- URL or page number
- Software release version (if applicable)

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- 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 .
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- 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: https://www.juniper.net/alerts/

- 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

Overview

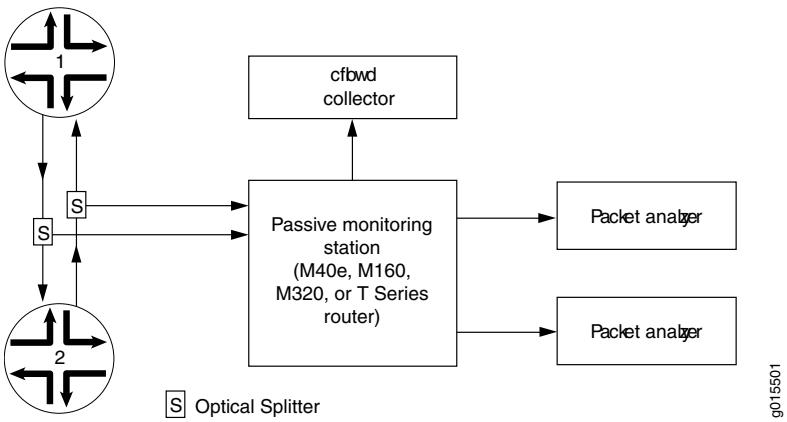
CHAPTER 1

Passive Flow Monitoring

Passive Flow Monitoring Overview

The router used for passive monitoring does not route packets from the monitored interface, nor does it run any routing protocols related to those interfaces; it only receives traffic flows, collects intercepted traffic, and exports it to cflowd servers and packet analyzers. Figure 1 on page 3 shows a typical topology for the passive flow-monitoring application.

Figure 1: Passive Monitoring Application Topology



Traffic travels normally between Router 1 and Router 2. To redirect IPv4 traffic, you insert an optical splitter on the interface between these two routers. The optical splitter copies and redirects the traffic to the monitoring station, which is an M40e, M160, M320, or T Series router. The optical cable connects only the receive port on the monitoring station, never the transmit port. This configuration allows the monitoring station to receive traffic from the router being monitored but never to transmit it back.

If you are monitoring traffic flow, the Internet Processor II application-specific integrated circuit (ASIC) in the router forwards a copy of the traffic to the Monitoring Services, Adaptive Services, or Multiservices PIC in the monitoring station. If more than one monitoring PIC is installed, the monitoring station distributes the load of the incoming traffic across the multiple PICs. The monitoring PICs generate flow records in cflowd version 5 format, and the records are then exported to the cflowd collector.

If you are performing lawful interception of traffic between the two routers, the Internet Processor II ASIC filters the incoming traffic and forwards it to the Tunnel Services PIC. Filter-based forwarding is then applied to direct the traffic to the packet analyzers.

Optionally, the intercepted traffic or the cflowd records can be encrypted by the ES PIC or IP Security (IPsec) services and then sent to a cflowd server or packet analyzer.

PART 2

Configuration

CHAPTER 2

Configuration Task

Enabling Passive Flow Monitoring

You can monitor IPv4 traffic from another router if you have the following components installed in an M Series, MX Series, or T Series router:

- Monitoring Services, Adaptive Services, or Multiservices PICs to perform the service processing
- SONET/SDH, Fast Ethernet, or Gigabit Ethernet PICs as transit interface

On SONET/SDH interfaces, you enable passive flow monitoring by including the **passive-monitor-mode** statement at the **[edit interfaces so-*fpc/pic/port* unit *logical-unit-number*]** hierarchy level:

```
[edit interfaces so-fpc/pic/port unit logical-unit-number]
passive-monitor-mode;
```

On Asynchronous Transfer Mode (ATM), Fast Ethernet, or Gigabit Ethernet interfaces, you enable passive flow monitoring by including the **passive-monitor-mode** statement at the **[edit interfaces *interface-name*]** hierarchy level:

```
[edit interfaces interface-name]
passive-monitor-mode;
```

IPv6 passive monitoring is not supported on Monitoring Services PICs. You must configure port mirroring to forward the packets from the passive monitored ports to other interfaces. Interfaces configured on the following FPCs and PIC support IPv6 passive monitoring on the T640 and T1600 routers:

- Enhanced Scaling FPC2
- Enhanced Scaling FPC3
- Enhanced II FPC1
- Enhanced II FPC2
- Enhanced II FPC3
- Enhanced Scaling FPC4

- Enhanced Scaling FPC4.1
- 4-port 10-Gigabit Ethernet LAN/WAN PIC with XFP (supported on both WAN-PHY and LAN-PHY mode for both IPv4 and IPv6 addresses)
- Gigabit Ethernet PIC with SFP
- 10-Gigabit Ethernet PIC with XENPAK (T1600 router)
- SONET/SDH OC192/STM64 PIC (T1600 router)
- SONET/SDH OC192/STM64 PICs with XFP (T1600 router)
- SONET/SDH OC48c/STM16 PIC with SFP (T1600 router)
- SONET/SDH OC48/STM16 (Multi-Rate)
- SONET/SDH OC12/STM4 (Multi–Rate) PIC with SFP
- Type 1 SONET/SDH OC3/STM1 (Multi–Rate) PIC with SFP

To configure port mirroring, include the **port-mirroring** statement at the **[edit forwarding-options]** hierarchy level.

When you configure an interface in passive monitoring mode, the Packet Forwarding Engine silently drops packets coming from that interface and destined to the router itself. Passive monitoring mode also stops the Routing Engine from transmitting any packet from that interface. Packets received from the monitored interface can be forwarded to monitoring interfaces. If you include the **passive-monitor-mode** statement in the configuration:

- The ATM interface is always up, and the interface does not receive or transmit incoming control packets, such as Operation, Administration, and Maintenance (OAM) and Interim Local Management Interface (ILMI) cells.
- The SONET/SDH interface does not send keepalives or alarms and does not participate actively on the network.
- Gigabit and Fast Ethernet interfaces can support both per-port passive monitoring and per-VLAN passive monitoring. The destination MAC filter on the receive port of the Ethernet interfaces is disabled.
- Ethernet encapsulation options are not allowed.
- Ethernet interfaces do not support the **stacked-vlan-tagging** statement for both IPv4 and IPv6 packets in passive monitoring mode.

On monitoring services interfaces, you enable passive flow monitoring by including the **family** statement at the **[edit interfaces** ***interface-name*** **unit** ***logical-unit-number*****]** hierarchy level, specifying the **inet** option:

```
[edit interfaces interface-name unit logical-unit-number]
family inet;
```

For the monitoring services interface, you can configure multiservice physical interface properties. For more information, see Configuring Flow-Monitoring Interfaces.

For conformity with the cflowd record structure, you must include the **receive-options-packets** and **receive-ttl-exceeded** statements at the **[edit interfaces *interface-name* unit *logical-unit-number* family inet]** hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number family inet]
receive-options-packets;
receive-ttl-exceeded;
```

For more information, see the following sections:

- Passive Flow Monitoring for MPLS Encapsulated Packets on page 9
- Example: Enabling IPv4 Passive Flow Monitoring on page 11
- Example: Enabling IPv6 Passive Flow Monitoring on page 13

Passive Flow Monitoring for MPLS Encapsulated Packets

On monitoring services interfaces, you can process MPLS packets that have not been assigned label values and have no corresponding entry in the **mpls.0** routing table. This allows you to assign a default route to unlabeled MPLS packets.

To configure a default label value for MPLS packets, include the **default-route** statement at the **[edit protocols mpls interface *interface-name* label-map]** hierarchy level:

```
[edit protocols mpls interface interface-name label-map]
default-route {
    (next-hop (address | interface-name | address/interface-name)) | (reject | discard);
    (pop | (swap <out-label>);
    class-of-service value;
    preference preference;
    type type;
}
```

For more information about static labels, see the *Junos OS MPLS Applications Configuration Guide*.

Removing MPLS Labels from Incoming Packets

The Junos OS can forward only IPv4 packets to a Monitoring Services, Adaptive Services, or Multiservices PIC. IPv4 and IPv6 packets with MPLS labels cannot be forwarded to a monitoring PIC. By default, if packets with MPLS labels are forwarded to the monitoring PIC, they are discarded. To monitor IPv4 and IPv6 packets with MPLS labels, you must remove the MPLS labels as the packets arrive on the interface.

You can remove up to two MPLS labels from an incoming packet by including the **pop-all-labels** statement at the **[edit interfaces *interface-name* (atm-options | fastether-options | gigether-options | sonet-options) mpls]** hierarchy level:

```
[edit interfaces interface-name (atm-options | fastether-options | gigether-options |
    sonet-options) mpls]
pop-all-labels {
    required-depth [ numbers ];
}
```

By default, the **pop-all-labels** statement takes effect for incoming packets with one or two labels. You can specify the number of MPLS labels that an incoming packet must

have for the **pop-all-labels** statement to take effect by including the **required-depth** statement at the **[edit interfaces *interface-name* (atm-options | fastether-options | gigether-options | sonet-options) mpls pop-all-labels]** hierarchy level:

```
[edit interfaces interface-name (atm-options | fastether-options | gigether-options |
    sonet-options) mpls pop-all-labels]
required-depth [ numbers ];
```

The required depth can be **1**, **2**, or **[1 2]**. If you include the **required-depth 1** statement, the **pop-all-labels** statement takes effect for incoming packets with one label only. If you include the **required-depth 2** statement, the **pop-all-labels** statement takes effect for incoming packets with two labels only. If you include the **required-depth [1 2]** statement, the **pop-all-labels** statement takes effect for incoming packets with one or two labels. A required depth of **[1 2]** is equivalent to the default behavior of the **pop-all-labels** statement.

When you remove MPLS labels from incoming packets, note the following:

- The **pop-all-labels** statement has no effect on IP packets with three or more MPLS labels.
- When you enable MPLS label removal, you must configure all ports on a PIC with the same label popping mode and required depth.
- You use the **pop-all-labels** statement to enable passive monitoring applications, not active monitoring applications.
- You cannot apply MPLS filters or accounting to the MPLS labels because the labels are removed as soon as the packet arrives on the interface.
- On ATM2 interfaces, you must use a label value greater than 4095 because the lower range of MPLS labels is reserved for label-switched interface (LSI) and virtual private LAN service (VPLS) support. For more information, see the *Junos OS VPNs Configuration Guide*.
- The following ATM encapsulation types are not supported on interfaces with MPLS label removal:
  - **atm-ccc-cell-relay**
  - **atm-ccc-vc-mux**
  - **atm-mlppp-llc**
  - **atm-tcc-snap**
  - **atm-tcc-vc-mux**
  - **ether-over-atm-llc**
  - **ether-vpls-over-atm-llc**

Example: Enabling IPv4 Passive Flow Monitoring

The following example shows a complete configuration for enabling passive flow monitoring on an Ethernet interface.

In this example, the Gigabit Ethernet interface can accept all Ethernet packets. It strips VLAN tags (if there are any) and up to two MPLS labels blindly, and passes IPv4 packets to the monitoring interface. With this configuration, it can monitor IPv4, VLAN+IPv4, VLAN+MPLS+IPv4, and VLAN+MPLS+MPLS+IPv4 labeled packets.

The Fast Ethernet interface can accept only packets with VLAN ID 100. All other packets are dropped. With this configuration, it can monitor VLAN (ID=100)+IPv4, VLAN (ID=100)+MPLS+IPv4, and VLAN (ID=100)+MPLS+MPLS+IPv4 labeled packets.

```
[edit firewall]
family inet {
   filter input-monitoring-filter {
      term def {
         then {
            count counter;
            accept;
         }
      }
   }
}
[edit interfaces]
ge-0/0/0 {
   passive-monitor-mode;
   gigether-options {
      mpls {
         pop-all-labels;
      }
   }
   unit 0 {
      family inet {
         filter {
            input input-monitoring-filter;
         }
      }
   }
}
fe-0/1/0 {
   passive-monitor-mode;
   vlan-tagging;
   fastether-options {
      mpls {
         pop-all-labels required-depth [ 1 2 ];
      }
   }
   unit 0 {
      vlan-id 100;
      family inet {
         filter {
            input input-monitoring-filter;
```

```
        }
      }
    }
  }
  mo-1/0/0 {
    unit 0 {
      family inet {
        receive-options-packets;
        receive-ttl-exceeded;
      }
    }
    unit 1 {
      family inet;
    }
  }
  [edit forwarding-options]
  monitoring mon1 {
    family inet {
      output {
        export-format cflowd-version-5;
        cflowd 50.0.0.2 port 2055;
        interface mo-1/0/0.0 {
          source-address 50.0.0.1;
        }
      }
    }
  }
  [edit routing-instances]
  monitoring-vrf {
    instance-type vrf;
    interface ge-0/0/0.0;
    interface fe-0/1/0.0;
    interface mo-1/0/0.1;
    route-distinguisher 68:1;
    vrf-import monitoring-vrf-import;
    vrf-export monitoring-vrf-export;
    routing-options {
      static {
        route 0.0.0.0/0 next-hop mo-1/0/0.1;
      }
    }
  }
  [edit policy-options]
  policy-statement monitoring-vrf-import {
    then {
      reject;
    }
  }
  policy-statement monitoring-vrf-export {
    then {
      reject;
    }
  }
```

Example: Enabling IPv6 Passive Flow Monitoring

The following example shows a complete configuration for enabling IPv6 passive flow monitoring on an Ethernet interface.

In this example, the Gigabit Ethernet interface can accept all Ethernet packets. It strips VLAN tags (if there are any) and up to two MPLS labels blindly, and passes IPv6 packets to the monitoring interface. With this configuration, the Gigabit Ethernet interface can monitor IPv6, VLAN+IPv6, VLAN+MPLS+IPv6, and VLAN+MPLS+MPLS+IPv6 labeled packets.

The vlan-tagged Gigabit Ethernet interface can accept only packets with VLAN ID 100. All other packets are dropped. With this configuration, it can monitor VLAN (ID=100)+IPv6, VLAN (ID=100)+MPLS+IPv6, and VLAN (ID=100)+MPLS+MPLS+IPv6 labeled packets.

```
[edit interfaces]
xe-0/1/0 {
   passive-monitor-mode;
   unit 0 {
      family inet6 {
         filter {
            input port-mirror6;
         }
         address 2001::1/128;
      }
   }
}
   xe-0/1/2 {
      passive-monitor-mode;
      vlan-tagging;
      unit 0 {
         vlan-id 100;
         family inet6 {
            filter {
               input port-mirror6;
            }
         }
      }
   }
   xe-0/1/1 {
      unit 0 {
         family inet6 {
            address 2000::1/128;
         }
      }
   }
[edit firewall]
family inet6 {
   filter port-mirror6 {
      term term2 {
         then {
            count count_pm;
            port-mirror;
            accept;
```

```
        }
      }
    }
}
[edit forwarding options]
port-mirroring {
    input {
        rate 1;
    }
    family inet6 {
        output {
            interface xe-0/1/1.0 {
                next-hop 2000::3;
            }
            no-filter-check;
        }
    }
}
```

CHAPTER 3

Configuration Statements

family (Monitoring)

Syntax

```
family inet {
  output {
    flow-active-timeout seconds;
    flow-inactive-timeout seconds;
    export-format format;
    cflowd hostname {
      aggregation {
        autonomous-system;
        destination-prefix;
        protocol-port;
        source-destination-prefix {
          caida-compliant;
        }
        source-prefix;
      }
      port port-number;
    }
    interface interface-name {
      engine-id number;
      engine-type number;
      input-interface-index number;
      output-interface-index number;
      source-address address;
    }
  }
}
```

Hierarchy Level [edit forwarding-options monitoring *name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Specify input and output interfaces and properties for flow monitoring. Only IPv4 (**inet**) is supported.

The statements are explained separately.

Usage Guidelines See Configuring Flow Monitoring.

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

passive-monitor-mode

Syntax passive-monitor-mode;

Hierarchy Level [edit interfaces *interface-name* unit *logical-unit-number*]

Release Information Statement introduced before Junos OS Release 7.4.

Description For Asynchronous Transfer Mode (ATM), SONET/SDH, Fast Ethernet, and Gigabit Ethernet interfaces only, monitor packet flows from another router. If you include this statement in the configuration, the SONET/SDH interface does not send keepalives or alarms, and does not participate actively on the network.

Usage Guidelines See "Enabling Passive Flow Monitoring" on page 7.

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

Related Documentation

- multiservice-options

pop-all-labels

Syntax

```
pop-all-labels {
  required-depth number;
}
```

Hierarchy Level

[edit interfaces *interface-name* atm-options mpls],
[edit interfaces *interface-name* fastether-options mpls],
[edit interfaces *interface-name* gigether-options mpls],
[edit interfaces *interface-name* sonet-options mpls]

Release Information

Statement introduced before Junos OS Release 7.4.

Description

For passive monitoring on ATM, SONET/SDH, Fast Ethernet, and Gigabit Ethernet interfaces only, removes up to two MPLS labels from incoming IP packets. For passive monitoring on T Series devices, removes up to five MPLS labels from incoming IP packets.

This statement has no effect on IP packets with more than two MPLS labels, or IP packets with more than five MPLS labels on T Series devices. Packets with MPLS labels cannot be processed by the monitoring PIC; if packets with MPLS labels are forwarded to the monitoring PIC, they are discarded.

The remaining statement is explained separately.

Default

If you omit this statement, the MPLS labels are not removed, and the packet is not processed by the monitoring PIC.

Usage Guidelines

See "Passive Flow Monitoring for MPLS Encapsulated Packets" on page 9.

Required Privilege Level

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

Related Documentation

- *Junos OS Network Interfaces Configuration Guide*

receive-options-packets

Syntax

```
receive-options-packets;
```

Hierarchy Level

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

Release Information

Statement introduced before Junos OS Release 7.4.

Description

When you enable passive monitoring, this statement is required for conformity with cflowd records structure.

Usage Guidelines

See "Enabling Passive Flow Monitoring" on page 7.

Required Privilege Level

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

receive-ttl-exceeded

Syntax receive-ttl-exceeded;

Hierarchy Level [edit interfaces *interface-name* unit *logical-unit-number* family inet]

Release Information Statement introduced before Junos OS Release 7.4.

Description When you enable passive monitoring, this statement is required for conformity with cflowd records structure.

Usage Guidelines See "Enabling Passive Flow Monitoring" on page 7.

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

required-depth

Syntax required-depth *number*;

Hierarchy Level [edit interfaces *interface-name* atm-options mpls pop-all-labels],
[edit interfaces *interface-name* fastether-options mpls pop-all-labels],
[edit interfaces *interface-name* gigether-options mpls pop-all-labels],
[edit interfaces *interface-name* sonet-options mpls pop-all-labels]

Release Information Statement introduced before Junos OS Release 7.4.

Description For passive monitoring on ATM, SONET/SDH, Fast Ethernet, and Gigabit Ethernet interfaces only, specify the number of MPLS labels an incoming packet must have for the **pop-all-labels** statement to take effect.

If you include the **required-depth 1** statement, the **pop-all-labels** statement takes effect for incoming packets with one label only. If you include the **required-depth 2** statement, the **pop-all-labels** statement takes effect for incoming packets with two labels only.

Options *number*—Number of MPLS labels on incoming IP packets.

Range: 1 through 2 labels.

Default: If you omit this statement, the **pop-all-labels** statement takes effect for incoming packets with one or two labels. The default is equivalent to including the **required-depth [1 2]** statement.

Usage Guidelines See "Passive Flow Monitoring for MPLS Encapsulated Packets" on page 9.

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

Related Documentation

- *Junos OS Network Interfaces Configuration Guide*

PART 3

Administration

CHAPTER 4

Passive Monitoring Operational Mode Commands

clear passive-monitoring statistics

Syntax clear passive-monitoring statistics (all | interface *interface-name*)

Release Information Command introduced in Junos OS Release 7.6.

Description (M40e, M160, and M320 routers and T Series routers only) Clear statistics for one passive monitoring interface or for all passive monitoring interfaces.

Options **all**—Clear statistics for all configured passive monitoring interfaces.

interface *interface-name*—Clear statistics for the specified passive monitoring interface (**mo-*fpc/pic/port***).

Required Privilege Level network

List of Sample Output clear passive-monitoring statistics on page 24

Output Fields When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear passive-monitoring statistics

```
user@host> clear passive-monitoring statistics interface mo-5/0/0
```

show passive-monitoring error

Syntax show passive-monitoring error (* | all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive monitoring error statistics.

Options *** | all | mo-*fpc/pic/port***—Display error statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output show passive-monitoring error all on page 26

Output Fields Table 3 on page 25 lists the output fields for the **show passive-monitoring error** command. Output fields are listed in the approximate order in which they appear.

Table 3: show passive-monitoring error Output Fields

Field Name	Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	State of the passive monitoring interface: • **Monitoring**—Specified interface is actively monitoring. • **Disabled**—Specified interface has been disabled from the CLI. • **Not monitoring**—The interface is operational, but not monitoring. This condition occurs when an interface first comes online, or when the interface is operational, but no logical unit has been configured under the physical interface. • **Unknown**—Unknown state. • **Error**—An error occurred during the process of determining the state of the interface.
Error information	
Packets dropped (no memory)	Number of packets dropped because of memory shortage.
Packets dropped (not IP)	Number of non-IP packets dropped.
Packets dropped (not IPv4)	Number of packets dropped because they failed the IPv4 version check.
Packets dropped (header too small)	Number of packets dropped because the packet length or IP header length was too small.

Table 3: show passive-monitoring error Output Fields *(continued)*

Field Name	Field Description
Memory allocation failures	Number of flow record memory allocation failures. A small number reflects failures to replenish the free list. A large number indicates the monitoring station is almost out of memory space.
Memory free failures	Number of flow record memory free failures.
Memory free list failures	Number of flow records received from free list that failed. Memory is nearly exhausted or too many new flows greater than 128 KB are being created per second.
Memory warning	Whether the flows have exceeded 1 million packets per second (Mpps) on a Monitoring Services PIC or 2 Mpps on a Monitoring Services II PIC. The response can be **Yes** or **No**.
Memory overload	Whether the memory has been overloaded. The response can be **Yes** or **No.**
PPS overload	Whether the PIC is receiving more packets per second than the configured threshold. The response can be **Yes** or **No**.
BPS overload	Whether the PIC is receiving more bits per second than the configured threshold. The response can be **Yes** or **No**.

Sample Output

show passive-monitoring error all

```
user@host> show passive-monitoring error all
Passive monitoring interface: mo-4/0/0, Local interface index: 44
Interface state: Monitoring
  Error information
    Packets dropped (no memory): 0, Packets dropped (not IP): 0
    Packets dropped (not IPv4): 0, Packets dropped (header too small): 0
    Memory allocation failures: 0, Memory free failures: 0
    Memory free list failures: 0
    Memory warning: No, Memory overload: No, PPS overload: No, BPS overload: No

Passive monitoring interface: mo-4/1/0, Local interface index: 45
Interface state: Not monitoring
  Error information
    Packets dropped (no memory): 0, Packets dropped (not IP): 0
    Packets dropped (not IPv4): 0, Packets dropped (header too small): 0
    Memory allocation failures: 0, Memory free failures: 0
    Memory free list failures: 0
    Memory warning: No, Memory overload: No, PPS overload: No, BPS overload: No
```

show passive-monitoring flow

Syntax show passive-monitoring flow (* | all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive flow statistics.

Options *** | all | mo-*fpc/pic/port***—Display passive flow statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output show passive-monitoring flow all on page 28

Output Fields Table 4 on page 27 lists the output fields for the **show passive-monitoring flow** command. Output fields are listed in the approximate order in which they appear.

Table 4: show passive-monitoring flow Output Fields

Field Name	Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	State of the passive monitoring interface: • **Monitoring**—Specified interface is actively monitoring. • **Disabled**—Specified interface has been disabled from the CLI. • **Not monitoring**—The interface is operational, but not monitoring. This condition occurs when an interface first comes online, or when the interface is operational, but no logical unit has been configured under the physical interface. • **Unknown**—Unknown state. • **Error**—An error occurred during the process of determining the state of the interface.
Flow information	
Flow packets	Number of packets received by an operational PIC.
Flow bytes	Number of bytes received by an operational PIC.
Flow packets 10-second rate	Number of packets per second handled by the PIC and displayed as a 10-second average.
Flow bytes 10-second rate	Number of bytes per second handled by the PIC and displayed as a 10-second average.
Active flows	Number of currently active flows tracked by the PIC.
Total flows	Total number of flows received by an operational PIC.

Table 4: show passive-monitoring flow Output Fields *(continued)*

Field Name	Field Description
Flows exported	Total number of flows exported by an operational PIC.
Flows packets exported	Total number of cflowd packets exported by an operational PIC.
Flows inactive timed out	Total number of flows that are exported because of inactivity.
Flows active timed out	Total number of long-lived flows that are exported because of an active timeout.

Sample Output

show passive-monitoring flow all

```
user@host> show passive-monitoring flow all
Passive monitoring interface: mo-4/0/0, Local interface index: 44
Interface state: Monitoring
  Flow information
    Flow packets: 6533434, Flow bytes: 653343400
    Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
    Active flows: 0, Total flows: 1599
    Flows exported: 1599, Flows packets exported: 55
    Flows inactive timed out: 1599, Flows active timed out: 0

Passive monitoring interface: mo-4/1/0, Local interface index: 45
Interface state: Monitoring
  Flow information
    Flow packets: 6537780, Flow bytes: 653778000
    Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
    Active flows: 0, Total flows: 1601
    Flows exported: 1601, Flows packets exported: 55
    Flows inactive timed out: 1601, Flows active timed out: 0
```

show passive-monitoring memory

Syntax show passive-monitoring memory (* | all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive monitoring memory and flow record statistics

Options *** | all | mo-*fpc/pic/port***—Display memory and flow record statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output show passive-monitoring memory all on page 29

Output Fields Table 5 on page 29 lists the output fields for the **show passive-monitoring memory** command. Output fields are listed in the approximate order in which they appear.

Table 5: show passive-monitoring memory Output Fields

Field Name	Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Memory utilization	
Allocation count	Number of flow records allocated.
Free count	Number of flow records freed.
Maximum allocated	Maximum number of flow records allocated since the monitoring station booted. This number represents the peak number of flow records allocated at a time.
Allocations per second	Flow records allocated per second during the last statistics interval on the PIC.
Frees per second	Flow records freed per second during the last statistics interval on the PIC.
Total memory used, Total memory free	Total memory currently used and total amount of memory currently free (in bytes).

Sample Output

show passive-monitoring memory all

```
user@host> show passive-monitoring memory all
Passive monitoring interface: mo-4/0/0, Local interface index: 44
  Memory utilization
    Allocation count: 1600, Free count: 1599, Maximum allocated: 1600
```

```
Allocations per second: 3200, Frees per second: 1438
Total memory used (in bytes): 103579176, Total memory free (in bytes):
163914184
```

show passive-monitoring status

Syntax show passive-monitoring status (*| all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive monitoring status.

Options ***| all | mo-*fpc/pic/port**—Display status for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output show passive-monitoring status all on page 32

Output Fields Table 6 on page 31 lists the output fields for the **show passive-monitoring status** command. Output fields are listed in the approximate order in which they appear.

Table 6: show passive-monitoring status Output Fields

Output Field	Output Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	Monitoring state of the passive monitoring interface. • **Monitoring**—PIC is actively monitoring. • **Disabled**—PIC has been disabled using the CLI. • **Not monitoring**—PIC is operational, but not monitoring. This condition can happen while the PIC is coming online, or when the PIC is operational but has no logical unit configured under the physical interface. • **Unknown**
Group index	Integer that represents the monitoring group of which the PIC is a member. **Group index** is a mapping from the group name to an index. It is not related to the number of monitoring groups.
Export interval	Configured export interval for cflowd records, in seconds.
Export format	Configured export format (only cflowd version 5 is supported).
Protocol	Protocol the PIC is configured to monitor (only IPv4 is supported).
Engine type	Configured engine type that is inserted in output cflowd packets.
Engine ID	Configured engine ID that is inserted in output cflowd packets.

Sample Output

show passive-monitoring status all

```
user@host> show passive-monitoring status all
Passive monitoring interface: mo-4/0/0, Local interface index: 44
Interface state: Monitoring
  Group index: 0
  Export interval: 15 secs, Export format: cflowd v5
  Protocol: IPv4, Engine type: 1, Engine ID: 1

Passive monitoring interface: mo-4/1/0, Local interface index: 45
Interface state: Disabled

Passive monitoring interface: mo-4/2/0, Local interface index: 46
Interface state: Not monitoring
```

show passive-monitoring usage

Syntax show passive-monitoring usage (* | all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive monitoring usage statistics.

Options *** | all | mo-*fpc/pic/port***—Display usage statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output show passive-monitoring usage all on page 33

Output Fields Table 7 on page 33 lists the output fields for the **show passive-monitoring usage** command. Output fields are listed in the approximate order in which they appear.

Table 7: show passive-monitoring usage Output Fields

Output Field	Output Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
CPU utilization	
Uptime	Time, in milliseconds, that the PIC has been operational.
Interrupt time	Total time that the PIC has spent processing packets since the last PIC reset.
Load (5 second)	CPU load on the PIC, averaged more than 5 seconds. The number is a percentage obtained by dividing the time spent on active tasks by the total elapsed time.
Load (1 minute)	CPU load on the PIC, averaged more than 1 minute. The number is a percentage obtained by dividing the time spent on active tasks by the total elapsed time.

Sample Output

show passive-monitoring usage all

```
user@host> show passive-monitoring usage
Passive monitoring interface: mo-4/0/0, Local interface index: 44
  CPU utilization
    Uptime: 653155 milliseconds, Interrupt time: 40213754 microseconds
    Load (5 second): 20%, Load (1 minute): 17%

Passive monitoring interface: mo-4/1/0, Local interface index: 45
  CPU utilization
    Uptime: 652292 milliseconds, Interrupt time: 40223178 microseconds
    Load (5 second): 22%, Load (1 minute): 15%
```

```
Passive monitoring interface: mo-4/2/0, Local interface index: 46
  CPU utilization
    Uptime: 649491 milliseconds, Interrupt time: 40173645 microseconds
    Load (5 second): 22%, Load (1 minute): 10098862%
```

PART 4

Index

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