

Traffic Policers Feature Guide for EX9200 Switches

Release

15.1



Modified: 2016-02-02

- If you reference a bandwidth policer from a stateless firewall filter term, you must include the **interface-specific** statement in the firewall filter configuration.

Guidelines for Applying a Bandwidth Policer

The following guidelines pertain to applying a bandwidth policer to traffic:

- You can use a bandwidth policer to rate-limit protocol-specific traffic (not **family any**) at the input or output of a logical interface.
- You can apply a bandwidth policer directly to protocol-specific input or output traffic at a logical interface.
- To send only selected packets to a bandwidth policer, you can reference the bandwidth policer from a stateless firewall filter term and then apply the filter to logical interface traffic for a specific protocol family.
 - To reference a *logical bandwidth policer* from a firewall filter, you must include the **interface-specific** statement in the firewall filter configuration.
 - You cannot use a bandwidth policer for forwarding-table filters.
- You cannot apply a bandwidth policer to an aggregate interface, a tunnel interface, or a software interface.

Related Documentation

- [Two-Color Policer Configuration Overview on page 53](#)
- [Example: Configuring a Logical Bandwidth Policer on page 80](#)
- [bandwidth-percent on page 217](#)
- [interface-specific](#)
- [logical-bandwidth-policer on page 236](#)
- [shaping-rate \(Applying to an Interface\)](#)

Example: Configuring a Logical Bandwidth Policer

This example shows how to configure a logical bandwidth policer.

- [Requirements on page 80](#)
- [Overview on page 81](#)
- [Configuration on page 82](#)
- [Verification on page 85](#)

Requirements

Before you begin, make sure that you have two logical units available on a Gigabit Ethernet interface.

Overview

In this example, you configure a single-rate two-color policer that specifies the bandwidth limit as a percentage value rather than as an absolute number of bits per second. This type of policer is called a *bandwidth policer*. By default, a bandwidth policer enforces a bandwidth limit based on the line rate of the underlying physical interface. As an option, you can configure a bandwidth policer to enforce a bandwidth limit based on the configured shaping rate of the logical interface. To configure this type of bandwidth policer, called a *logical bandwidth policer*, you include the `logical-bandwidth-policer` statement in the policer configuration.

To configure a logical interface shaping rate, include the `shaping-rate bps` statement at the `[edit class-of-service interfaces interface interface-name unit logical-unit-number]` hierarchy level. This class-of-service (CoS) configuration statement causes the specified amount of bandwidth to be allocated to the logical interface.



NOTE: If you configure a policer bandwidth limit as a percentage but a shaping rate is not configured for the target logical interface, the policer bandwidth limit is calculated as a percentage of the physical interface media rate, even if you enable the logical-bandwidth policing feature.

To apply a logical bandwidth policer to a logical interface, you can apply the policer directly to the logical interface at the protocol family level or (if you only need to rate-limit filtered packets) you can reference the policer from a stateless firewall filter configured to operate in *interface-specific* mode.

Topology

In this example, you configure two logical interfaces on a single Gigabit Ethernet interface and configure a shaping rate on each logical interface. On logical interface `ge-1/3/0.0`, you allocate 4 Mbps of bandwidth. On logical interface `ge-1/3/0.1`, you allocate 2 Mbps of bandwidth.

You also configure a logical bandwidth policer with a bandwidth limit of 50 percent and a maximum burst size of 125,000 bytes, and then you apply the policer to input and output traffic at the logical units configured on `ge-1/3/0.0`. For logical interface `ge-1/3/0.0`, the policer rate-limits to a bandwidth limit of 2 Mbps (50 percent of the 4 Mbps shaping rate configured for the logical interface). For logical interface `ge-1/3/0.1`, the policer rate-limits traffic to a bandwidth limit of 1 Mbps (50 percent of the 2 Mbps shaping rate configured for the logical interface).

If no shaping rate is configured for a target logical interface, the policer rate-limits to a bandwidth limit calculated as 50 percent of the physical interface media rate. For example, if you apply a 50 percent bandwidth policer to input or output traffic at a Gigabit Ethernet logical interface without rate shaping, the policer applies a bandwidth limit of 500 Mbps (50 percent of 1000 Mbps).

2. Apply the logical bandwidth policer to the first logical interface.

```
[edit interfaces ge-1/3/0]
user@host# set unit 0 family inet policer input LB-policer
user@host# set unit 0 family inet policer output LB-policer
```

3. Apply the policing to the second logical interface.

```
[edit interfaces ge-1/3/0]
user@host# set unit 1 family inet policer input LB-policer
user@host# set unit 1 family inet policer output LB-policer
```

Results Confirm the configuration of the interfaces by entering the **show interfaces** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show interfaces
ge-1/3/0 {
  per-unit-scheduler;
  vlan-tagging;
  unit 0 {
    vlan-id 100;
    family inet {
      policer {
        input LB-policer;
        output LB-policer;
      }
      address 172.1.1.1/30;
    }
  }
  unit 1 {
    vlan-id 200;
    family inet {
      policer {
        input LB-policer;
        output LB-policer;
      }
      address 172.2.1.1/30;
    }
  }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

Verification

Confirm that the configuration is working properly.

- [Displaying Traffic Statistics and Policers for the Logical Interface on page 86](#)
- [Displaying Statistics for the Policer on page 87](#)

Displaying Traffic Statistics and Policers for the Logical Interface

Purpose Verify the traffic flow through the logical interface and that the policer is evaluated when packets are received on the logical interface.

Action Use the **show interfaces** operational mode command for logical interfaces **ge-1/3/0.0** and **ge-1/3/0.1**, and include the **detail** or **extensive** option. The command output section for **Traffic statistics** lists the number of bytes and packets received and transmitted on the logical interface, and the **Protocol inet** section contains a **Policer** field that lists the policer **LB-policer** as an input or output policer as follows:

- **Input:** LB-policer-ge-1/3/0.0-inet-i
- **Output:** LB-policer-ge-1/3/0.0-inet-o

In this example, the policer is applied to logical interface traffic in both the input and output directions.

```
user@host> show interfaces ge-1/3/0.0 detail
Logical interface ge-1/3/0.0 (Index 80) (SNMP ifIndex 154) (Generation 150)
  Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.100 ] Encapsulation: ENET2
  Traffic statistics:
    Input bytes : 0
    Output bytes : 46
    Input packets: 0
    Output packets: 1
  Local statistics:
    Input bytes : 0
    Output bytes : 46
    Input packets: 0
    Output packets: 1
  Transit statistics:
    Input bytes : 0 0 bps
    Output bytes : 0 0 bps
    Input packets: 0 0 pps
    Output packets: 0 0 pps
  Protocol inet, MTU: 1500, Generation: 174, Route table: 0
    Flags: Sendbcst-pkt-to-re
    Policer: Input: LB-policer-ge-1/3/0.0-inet-i, Output:
LB-policer-ge-1/3/0.0-inet-o
    Addresses, Flags: Is-Preferred Is-Primary
    Destination: 172.1.1.0/30, Local: 172.1.1.1, Broadcast: 172.1.1.3,
    Generation: 165
```

```
user@host> show interfaces ge-1/3/0.1 detail
Logical interface ge-1/3/0.1 (Index 81) (SNMP ifIndex 543) (Generation 151)
  Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.200 ] Encapsulation: ENET2
  Traffic statistics:
    Input bytes : 0
    Output bytes : 46
    Input packets: 0
    Output packets: 1
  Local statistics:
    Input bytes : 0
    Output bytes : 46
    Input packets: 0
    Output packets: 1
```


- Related Documentation**
- [Statement Hierarchy for Configuring Policers on page 17](#)
 - [Two-Color Policer Configuration Overview on page 53](#)
 - [Guidelines for Applying Traffic Policers on page 19](#)
 - [bandwidth-percent on page 217](#)
 - *interface-specific (Firewall Filters)*
 - [logical-bandwidth-policer on page 236](#)
 - *shaping-rate (Applying to an Interface)*

CHAPTER 9

Filter-Specific Counters and Policers

- [Filter-Specific Policer Overview on page 89](#)
- [Example: Configuring a Stateless Firewall Filter to Protect Against TCP and ICMP Floods on page 90](#)

Filter-Specific Policer Overview

By default, a policer operates in *term-specific* mode so that, for a given firewall filter, the Junos OS creates a separate policer instance for every filter term that references the policer. As an option, you can configure a policer to operate in *filter-specific* mode so that a single policer instance is used by all terms (within the same firewall filter) that reference the policer.

For an IPv4 firewall filter with multiple terms that reference the same policer, configuring the policer to operate in filter-specific mode enables you to count and monitor the activity of the policer at the firewall filter level.



NOTE: Term-specific mode and filter-specific mode also apply to prefix-specific policer sets.

To enable a single-rate two-color policer to operate in filter-specific mode, you can include the **filter-specific** statement at the following hierarchy levels:

- **[edit firewall policer *policer-name*]**
- **[edit logical-systems *logical-system-name* firewall policer *policer-name*]**

You can reference filter-specific policers from IPv4 (**family inet**) firewall filters only.

Related Documentation

- [Two-Color Policer Configuration Overview on page 53](#)
- [Example: Configuring a Stateless Firewall Filter to Protect Against TCP and ICMP Floods on page 90](#)
- [Filter-Specific Counter and Policer Set Overview on page 104](#)

Example: Configuring a Stateless Firewall Filter to Protect Against TCP and ICMP Floods

This example shows how to create a stateless firewall filter that protects against TCP and ICMP denial-of-service attacks.

- [Requirements on page 90](#)
- [Overview on page 90](#)
- [Configuration on page 91](#)
- [Verification on page 96](#)

Requirements

No special configuration beyond device initialization is required before configuring stateless firewall filters.

Overview

In this example we create a stateless firewall filter called **protect-RE** to police TCP and ICMP packets. It uses the policers described here:

- **tcp-connection-policer**—This policer limits TCP traffic to 1,000,000 bits per second (bps) with a maximum burst size of 15,000 bytes. Traffic exceeding either limit is discarded.
- **icmp-policer**—This policer limits ICMP traffic to 1,000,000 bps with a maximum burst size of 15,000 bytes. Traffic exceeding either limit is discarded.

When specifying limits, the bandwidth limit can be from 32,000 bps to 32,000,000,000 bps and the burst-size limit can be from 1,500 bytes through 100,000,000 bytes. Use the following abbreviations when specifying limits: k (1,000), m (1,000,000), and g (1,000,000,000).

Each policer is incorporated into the action of a filter term. This example includes the following terms:

- **tcp-connection-term**—Policies certain TCP packets with a source address of 192.168.0.0/24 or 10.0.0.0/24. These addresses are defined in the **trusted-addresses** prefix list.

Filtered packets include **tcp-established** packets. The **tcp-established** match condition is an alias for the bit-field match condition **tcp-flags "(ack | rst)"**, which indicates an established TCP session, but not the first packet of a TCP connection.

- **icmp-term**—Policies ICMP packets. All ICMP packets are counted in the **icmp-counter** counter.



NOTE: You can move terms within the firewall filter by using the **insert** command. See *insert* in the *CLI User Guide*.

- ```
[edit routing-options]
user@R2# set autonomous-system 200
user@R2# set router-id 192.168.0.2
```
4. Configure OSPF.
 

```
[edit protocols ospf area 0.0.0.0]
user@R2# set interface lo0.0 passive
user@R2# set interface fe-1/2/0.0
```
  5. Define the list of trusted addresses.
 

```
[edit policy-options prefix-list trusted-addresses]
user@R2# set 10.0.0.0/24
user@R2# set 192.168.0.0/24
```
  6. Configure a policy to advertise direct routes.
 

```
[edit policy-options policy-statement send-direct term 1]
user@R2# set from protocol direct
user@R2# set then accept
```
  7. Configure the TCP policer.
 

```
[edit firewall policer tcp-connection-policer]
user@R2# set filter-specific
user@R2# set if-exceeding bandwidth-limit 1m
user@R2# set if-exceeding burst-size-limit 15k
user@R2# set then discard
```
  8. Create the ICMP policer.
 

```
[edit firewall policer icmp-policer]
user@R2# set filter-specific
user@R2# set if-exceeding bandwidth-limit 1m
user@R2# set if-exceeding burst-size-limit 15k
user@R2# set then discard
```
  9. Configure the TCP filter rules.
 

```
[edit firewall family inet filter protect-RE term tcp-connection-term]
user@R2# set from source-prefix-list trusted-addresses
user@R2# set from protocol tcp
user@R2# set from tcp-established
user@R2# set then policer tcp-connection-policer
user@R2# set then accept
```
  10. Configure the ICMP filter rules.
 

```
[edit firewall family inet filter protect-RE term icmp-term]
user@R2# set from source-prefix-list trusted-addresses
user@R2# set from protocol icmp
user@R2# set then policer icmp-policer
user@R2# set then count icmp-counter
user@R2# set then accept
```
  11. Apply the filter to the loopback interface.
 

```
[edit interfaces lo0 unit 0]
user@R2# set family inet filter input protect-RE
```

**Results** Confirm your configuration by entering the **show interfaces**, **show protocols**, **show policy-options**, **show routing-options**, and **show firewall** commands from configuration mode. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
user@R2# show interfaces
fe-1/2/0 {
 unit 0 {
 family inet {
 address 10.0.0.2/30;
 }
 }
}
lo0 {
 unit 0 {
 family inet {
 filter {
 input protect-RE;
 }
 address 192.168.0.2/32 {
 primary;
 }
 address 172.16.0.2/32;
 }
 }
}

user@R2# show protocols
bgp {
 group ext {
 type external;
 export send-direct;
 neighbor 10.0.0.1 {
 peer-as 100;
 }
 }
}
ospf {
 area 0.0.0.0 {
 interface lo0.0 {
 passive;
 }
 interface fe-1/2/0.0;
 }
}

user@R2# show policy-options
prefix-list trusted-addresses {
 10.0.0.0/24;
 192.168.0.0/24;
}
policy-statement send-direct {
 term 1 {
 from protocol direct;
 then accept;
 }
}
```

```

}

user@R2# show routing-options
router-id 192.168.0.2;
autonomous-system 200;

user@R2# show firewall
family inet {
 filter protect-RE {
 term tcp-connection-term {
 from {
 source-prefix-list {
 trusted-addresses;
 }
 protocol tcp;
 tcp-established;
 }
 then {
 policer tcp-connection-policer;
 accept;
 }
 }
 term icmp-term {
 from {
 source-prefix-list {
 trusted-addresses;
 }
 protocol icmp;
 }
 then {
 policer icmp-policer;
 count icmp-counter;
 accept;
 }
 }
 }
}

policer tcp-connection-policer {
 filter-specific;
 if-exceeding {
 bandwidth-limit 1m;
 burst-size-limit 15k;
 }
 then discard;
}

policer icmp-policer {
 filter-specific;
 if-exceeding {
 bandwidth-limit 1m;
 burst-size-limit 15k;
 }
 then discard;
}
}

```

If you are done configuring the device, enter **commit** from configuration mode.









- The ping output shows that 10% packet loss is occurring.
- The ICMP packet counter is incrementing, and the icmp-policer is incrementing.
- Device R2 does not send ICMP responses to the **ping 172.16.0.2 source 172.16.0.1** command.

**Related  
Documentation**

- *Example: Configuring a Stateless Firewall Filter to Accept Traffic from Trusted Sources*
- [Two-Color Policer Configuration Overview on page 53](#)

**Related  
Documentation**

- [Statement Hierarchy for Configuring Policers on page 17](#)
- [Two-Color Policer Configuration Overview on page 53](#)
- [Guidelines for Applying Traffic Policers on page 19](#)
- [Prefix-Specific Counting and Policing Actions on page 101](#)

## CHAPTER 10

# Prefix-Specific Counting and Policing Actions

- [Prefix-Specific Counting and Policing Overview on page 101](#)
- [Filter-Specific Counter and Policer Set Overview on page 104](#)
- [Example: Configuring Prefix-Specific Counting and Policing on page 104](#)
- [Prefix-Specific Counting and Policing Configuration Scenarios on page 111](#)

## Prefix-Specific Counting and Policing Overview

---

This topic covers the following information:

- [Separate Counting and Policing for Each IPv4 Address Range on page 101](#)
- [Prefix-Specific Action Configuration on page 102](#)
- [Counter and Policer Set Size and Indexing on page 103](#)

### Separate Counting and Policing for Each IPv4 Address Range

Prefix-specific counting and policing enables you to configure an IPv4 firewall filter term that matches on a source or destination address, applies a single-rate two-color policer as the term action, but associates the matched packet with a specific counter and policer instance based on the source or destination in the packet header. You can implicitly create a separate counter or policer instance for a single address or for a group of addresses.

Prefix-specific counting and policing uses a *prefix-specific action* configuration that specifies the name of the policer you want to apply, whether prefix-specific counting is to be enabled, and a source or destination address prefix range.

The prefix range specifies between 1 and 16 sequential set bits of an IPv4 address mask. The length of the prefix range determines the size of the counter and policer set, which consists of as few as 2 or as many as 65,536 counter and policer instances. The position of the bits of the prefix range determines the indexing of filter-matched packets into the set of instances.



**NOTE:** A prefix-specific action is specific to a source or destination *prefix range*, but it is not specific to a particular source or destination *address range*, and it is not specific to a particular interface.

To apply a prefix-specific action to the traffic at an interface, you configure a firewall filter term that matches on source or destination addresses, and then you apply the firewall filter to the interface. The flow of filtered traffic is rate-limited using prefix-specific counter and policer instances that are selected per packet based on the source or destination address in the header of the filtered packet.

## Prefix-Specific Action Configuration

To configure a prefix-specific action, you specify the following information:

- Prefix-specific action name—Name that can be referenced as the action of an IPv4 standard firewall filter term that matches packets on source or destination addresses.
- Policer name—Name of a single-rate two-color policer for which you want to implicitly create prefix-specific instances.



**NOTE:** For aggregated Ethernet interfaces, you can configure a prefix-specific action that references a logical interface policer (also called an aggregate policer). You can reference this type of prefix-specific action from an IPv4 standard firewall filter and then apply the filter at the aggregate level of the interface.

- Counting option—Option to include if you want to enable prefix-specific counters.
- Filter-specific option—Option to include if you want a single counter and policer set to be shared across all terms in the firewall filter. A prefix-specific action that operates in this way is said to operate in *filter-specific* mode. If you do not enable this option, the prefix-specific action operates in *term-specific* mode, meaning that a separate counter and policer set is created for each filter term that references the prefix-specific action.
- Source address prefix length—Length of the address prefix, from 0 through 32, to be used with a packet matched on the source address.
- Destination address prefix length—Length of the address prefix, from 0 through 32, to be used with a packet matched on the destination address.
- Subnet prefix length—Length of the subnet prefix, from 0 through 32, to be used with a packet matched on either the source or destination address.

You must configure source and destination address prefix lengths to be from 1 to 16 bits longer than the subnet prefix length. If you configure source or destination address prefix lengths to be more than 16 bits beyond the configured subnet prefix length, an error occurs when you try to commit the configuration.









**Results** Confirm the configuration of the policer by entering the **show firewall** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show firewall
policer 1Mbps-policer {
 if-exceeding {
 bandwidth-limit 1m;
 burst-size-limit 63k;
 }
 then discard;
}
```

### Configuring a Prefix-Specific Action Based on the Policer

**Step-by-Step Procedure** To configure a prefix-specific action that references the policer and specifies a portion of a source address prefix:

1. Enable configuration of a prefix-specific action.

```
[edit]
user@host# edit firewall family inet prefix-action psa-1Mbps-per-source-24-32-256
```

Prefix-specific counting and policing can be defined for IPv4 traffic only.

2. Reference the policer for which a prefix-specific set is to be created.

```
[edit firewall family inet prefix-action psa-1Mbps-per-source-24-32-256]
user@host# set policer 1Mbps-policer
user@host# set count
```



**NOTE:** For aggregated Ethernet interfaces, you can configure a prefix-specific action that references a logical interface policer (also called an aggregate policer). You can reference this type of prefix-specific action from an IPv4 standard firewall filter and then apply the filter at the aggregate level of the interface.

3. Specify the prefix range on which IPv4 addresses are to be indexed to the counter and policer set.

```
[edit firewall family inet prefix-action psa-1Mbps-per-source-24-32-256]
user@host# set source-prefix-length 32
user@host# set subnet-prefix-length 24
```

**Results** Confirm the configuration of the prefix-specific action by entering the **show firewall** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show firewall
policer 1Mbps-policer {
 if-exceeding {
```

```
 bandwidth-limit 1m;
 burst-size-limit 63k;
 }
 then discard;
}
family inet {
 prefix-action psa-1Mbps-per-source-24-32-256 {
 policer 1Mbps-policer;
 subnet-prefix-length 24;
 source-prefix-length 32;
 }
}
```

---

### Configuring an IPv4 Filter That References the Prefix-Specific Action

**Step-by-Step Procedure** To configure an IPv4 standard firewall filter that references the prefix-specific action:

1. Enable configuration of the IPv4 standard firewall filter.

```
[edit]
user@host# edit firewall family inet filter limit-source-one-24
```

Prefix-specific counting and policing can be defined for IPv4 traffic only.

2. Configure the filter term to match on the packet source address or destination address.

```
[edit firewall family inet filter limit-source-one-24]
user@host# set term one from source-address 10.10.10.0/24
```

3. Configure the filter term to reference the prefix-specific action.

```
[edit firewall family inet filter limit-source-one-24]
user@host# set term one then prefix-action psa-1Mbps-per-source-24-32-256
```

You could also use the **next term** action to configure all Hypertext Transfer Protocol (HTTP) traffic to each host to transmit at 500 Kbps and have the total HTTP traffic limited to 1 Mbps.

**Results** Confirm the configuration of the prefix-specific action by entering the **show firewall** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show firewall
policer 1Mbps-policer {
 if-exceeding {
 bandwidth-limit 1m;
 burst-size-limit 63k;
 }
 then discard;
}
family inet {
 prefix-action psa-1Mbps-per-source-24-32-256 {
 policer 1Mbps-policer;
 subnet-prefix-length 24;
 source-prefix-length 32;
 }
}
```

```

}
filter limit-source-one-24 {
 term one {
 from {
 source-address {
 10.10.10.0/24;
 }
 }
 then prefix-action psa-1Mbps-per-source-24-32-256;
 }
}
}

```

### Applying the Firewall Filter to IPv4 Input Traffic at a Logical Interface

#### Step-by-Step Procedure

To apply the firewall filter to IPv4 input traffic at a logical interface:

1. Enable configuration of IPv4 on the logical interface.  

```
[edit]
user@host# edit interfaces so-0/0/2 unit 0 family inet
```
2. Configure an IP address.  

```
[edit interfaces so-0/0/2 unit 0 family inet]
user@host# set address 10.39.1.1/16
```
3. Apply the IPv4 standard stateless firewall filter.  

```
[edit interfaces so-0/0/2 unit 0 family inet]
user@host# set filter input limit-source-one-24
```

#### Results

Confirm the configuration of the prefix-specific action by entering the **show interfaces** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```

[edit]
user@host# show interfaces
so-0/0/2 {
 unit 0 {
 family inet {
 filter {
 input limit-source-one-24;
 }
 address 10.39.1.1/16;
 }
 }
}

```

If you are done configuring the device, enter **commit** from configuration mode.







## Scenario 1: Firewall Filter Term Matches on Multiple Addresses

The complete example, “[Example: Configuring Prefix-Specific Counting and Policing](#)” on [page 104](#), shows the simplest case of prefix-specific actions, in which a single-term firewall filter matches on one address with a prefix length that is the same as the subnet prefix length specified in the prefix-specific action. Unlike the example, this scenario describes a configuration in which a single-term firewall filter matches on two IPv4 source addresses. In addition, the additional condition matches on a source address with a prefix length that is different from the subnet prefix length defined in the prefix-specific action. In this case, the additional condition matches on the /16 subnet of the source address 10.11.0.0.



**NOTE:** Unlike packets that match the source address 10.10.10.0/24, packets that match the source address 10.11.0.0/16 are in a many-to-one correspondence with the instances in the counter and policer set.

The filter-matched packets that are passed to the prefix-specific action index into the counter and policer set in such a way that the counting and policing instances are shared by packets that contain source addresses across the 10.10.10.0/24 and 10.11.0.0/16 subnets as follows:

- The first counter and policer in the set are indexed by packets with source addresses 10.10.10.0 and 10.11.x.0, where x ranges from 0 through 255.
- The second counter and policer in the set are indexed by packets with source addresses 10.10.10.1 and 10.11.x.1, where x ranges from 0 through 255.
- The 256th (last) counter and policer in the set are indexed by packets with source addresses 10.10.10.255 and 10.11.x.255, where x ranges from 0 through 255.

The following configuration shows the statements for configuring the single-rate two-color policer, the prefix-specific action that references the policer, and the IPv4 standard stateless firewall filter that references the prefix-specific action:

```
[edit]
firewall {
 policer 1Mbps-policer {
 if-exceeding {
 bandwidth-limit 1m;
 burst-size-limit 63k;
 }
 then discard;
 }
 family inet {
 prefix-action psa-1Mbps-per-source-24-32-256 {
 policer 1Mbps-policer;
 subnet-prefix-length 24;
 source-prefix-length 32;
 }
 filter limit-source-two-24-16 {
 term one {
 from {
```



The following configuration shows the statements for configuring the single-rate two-color policer, the prefix-specific action that references the policer, and the IPv4 standard stateless firewall filter that references the prefix-specific action:

```
[edit]
firewall {
 policer 1Mbps-policer {
 if-exceeding {
 bandwidth-limit 1m;
 burst-size-limit 63k;
 }
 then discard;
 }
 family inet {
 prefix-action psa-1Mbps-per-source-25-32-128 {
 policer 1Mbps-policer;
 subnet-prefix-length 25;
 source-prefix-length 32;
 }
 filter limit-source-one-24 {
 term one {
 from {
 source-address {
 10.10.10.0/24;
 }
 }
 then prefix-action psa-1Mbps-per-source-25-32-128;
 }
 }
 }
}
interfaces {
 so-0/0/2 {
 unit 0 {
 family inet {
 filter {
 input limit-source-one-24;
 }
 address 10.39.1.1/16;
 }
 }
 }
}
```

### Scenario 3: Subnet Prefix Is Shorter Than the Prefix in the Firewall Filter Match Condition

The complete example, “[Example: Configuring Prefix-Specific Counting and Policing](#)” on [page 104](#), shows the simplest case of prefix-specific actions, in which the single-term firewall filter matches on one address with a prefix length that is the same as the subnet prefix length specified in the prefix-specific action. Unlike the example, this scenario describes a configuration in which the prefix-specific action defines a subnet prefix length that is shorter than the prefix of the source address matched by the firewall filter. In this case, the filter term matches on the /25 subnet of the source address 10.10.10.0.



**NOTE:** The firewall filter passes the prefix-specific action only packets with source addresses that range from 10.10.10.0 through 10.10.10.127, while the prefix-specific action specifies a set of 256 counters and policers, numbered from 0 through 255.

The matched packets that are passed to the prefix-specific action index into the lower half of the counter and policer set only:

- The first counter and policer in the set are indexed by packets with source address **10.10.10.0**.
- The second counter and policer in the set are indexed by packets with source address **10.10.10.1** and **10.10.10.129**.
- The 128th counter and policer in the set are indexed by packets with source address **10.10.10.127**.
- The upper half of the set (instances numbered from 128 through 255) are not indexed by packets passed to the prefix-specific action from this particular firewall filter.

The following configuration shows the statements for configuring the single-rate two-color policer, the prefix-specific action that references the policer, and the IPv4 standard stateless firewall filter that references the prefix-specific action:

```
[edit]
firewall {
 policer 1Mbps-policer {
 if-exceeding {
 bandwidth-limit 1m;
 burst-size-limit 63k;
 }
 then discard;
 }
 family inet {
 prefix-action psa-1Mbps-per-source-24-32-256 {
 policer 1Mbps-policer;
 subnet-prefix-length 24;
 source-prefix-length 32;
 }
 filter limit-source-one-25 {
 term one {
 from {
 source-address {
 10.10.10.0/25;
 }
 }
 then prefix-action psa-1Mbps-per-source-24-32-256;
 }
 }
 }
}
interfaces {
 so-0/0/2 {
```

```
unit 0 {
 family inet {
 filter {
 input limit-source-one-25;
 }
 address 10.39.1.1/16;
 }
}
}
```

**Related  
Documentation**

- [Two-Color Policer Configuration Overview on page 53](#)
- [Prefix-Specific Counting and Policing Overview on page 101](#)
- [Filter-Specific Counter and Policer Set Overview on page 104](#)
- [Example: Configuring Prefix-Specific Counting and Policing on page 104](#)

**Related  
Documentation**

- [Statement Hierarchy for Configuring Policers on page 17](#)
- [Two-Color Policer Configuration Overview on page 53](#)
- [Guidelines for Applying Traffic Policers on page 19](#)



## CHAPTER 11

# Multifield Classification

- [Multifield Classification Overview on page 119](#)
- [Multifield Classification Requirements and Restrictions on page 122](#)
- [Multifield Classification Limitations on M Series Routers on page 123](#)
- [Example: Configuring Multifield Classification on page 125](#)
- [Example: Configuring a Multifield Classifier to Define Forwarding Behavior on page 131](#)

## Multifield Classification Overview

---

This topic covers the following information:

- [Forwarding Classes and PLP Levels on page 119](#)
- [Multifield Classification and BA Classification on page 119](#)
- [Multifield Classification Used In Conjunction with Policers on page 120](#)

## Forwarding Classes and PLP Levels

You can configure the Junos OS class of service (CoS) features to classify incoming traffic by associating each packet with a forwarding class, a packet loss priority (PLP) level, or both:

- Based on the associated forwarding class, each packet is assigned to an output queue, and the router services the output queues according to the associated scheduling you configure.
- Based on the associated PLP, each packet carries a lower or higher likelihood of being dropped if congestion occurs. The CoS random early detection (RED) process uses the drop probability configuration, output queue fullness percentage, and packet PLP to drop packet as needed to control congestion at the output stage.

## Multifield Classification and BA Classification

The Junos OS supports two general types of packet classification: behavior aggregate (BA) classification and multifield classification:

- BA classification, or CoS value traffic classification, refers to a method of packet classification that uses a CoS configuration to set the forwarding class or PLP of a packet based on the *CoS value* in the IP packet header. The CoS value examined for

BA classification purposes can be the Differentiated Services code point (DSCP) value, DSCP IPv6 value, IP precedence value, MPLS EXP bits, and IEEE 802.1p value. The default classifier is based on the IP precedence value.

- Multifield classification refers to a method of packet classification that uses a standard stateless firewall filter to set the forwarding class or PLP for packets entering or exiting the interface based on multiple fields in the IP packet. You can configure multifield classifier that specifies match conditions based on CoS values (such as DSCP value, IP precedence value, MPLS EXP bits, or IEEE 802.1p bits), other packet values (such as IP address fields, the IP protocol type field, or the port number in the UDP or TCP pseudoheader field), or a combination. Use multifield classification instead of BA classification when you need to classify packets based on information in the packet other than the CoS values only.

With multifield classification, a firewall filter term can specify the packet classification actions for matching packets through the use of the **forwarding-class *class-name*** or **loss-priority (*high* | *medium-high* | *medium-low* | *low*)** nonterminating actions in the term's **then** clause.



**NOTE:** BA classification of a packet can be overridden by the stateless firewall filter actions **forwarding-class** and **loss-priority**.

---

## Multifield Classification Used In Conjunction with Policers

To configure multifield classification in conjunction with rate limiting, a firewall filter term can specify the packet classification actions for matching packets through the use of a **policer** nonterminating action that references a single-rate two-color policer.

When multifield classification is configured to perform classification through a policer, the filter-matched packets in the traffic flow are rate-limited to the policer-specified traffic limits. Packets in a conforming flow of filter-matched packets are implicitly set to a **low** PLP. Packets in a nonconforming traffic flow can be discarded, or the packets can be set to a specified forwarding class, set to a specified PLP level, or both, depending on the type of policer and how the policer is configured to handle nonconforming traffic.



**NOTE:** Before you apply a firewall filter that performs multifield classification and also a policer to the same logical interface and for the same traffic direction, make sure that you consider the order of policer and firewall filter operations.

As an example, consider the following scenario:

- You configure a firewall filter that performs multifield classification (acts on matched packets by setting the forwarding class, the PLP, or both) based on the packet's existing forwarding class or PLP. You apply the firewall filter at the input of a logical interface.
- You also configure a single-rate two-color policer that acts on a red traffic flow by re-marking (setting the forwarding class, the PLP, or both) rather than discarding those packets. You apply the policer as an interface policer at the input of the same logical interface to which you apply the firewall filter.

Because of the order of policer and firewall operations, the input policer is executed before the input firewall filter. This means that the multifield classification specified by the firewall filter is performed on input packets that have already been re-marked once by policing actions. Consequently, any input packet that matches the conditions specified in a firewall filter term is then subject to a second re-marking according to the forwarding-class or loss-priority nonterminating actions also specified in that term.

#### Related Documentation

- *Firewall Filter Nonterminating Actions*
- [Order of Policer and Firewall Filter Operations on page 12](#)
- [Two-Color Policer Configuration Overview on page 53](#)
- [Multifield Classification Requirements and Restrictions on page 122](#)
- [Multifield Classification Limitations on M Series Routers on page 123](#)
- [Example: Configuring Multifield Classification on page 125](#)
- *The Junos OS CoS Components Used to Manage Congestion and Control Service Levels*
- *Understanding How Behavior Aggregate Classifiers Prioritize Trusted Traffic*
- *Forwarding Classes Overview*
- *Default Forwarding Classes*
- *Managing Congestion Using RED Drop Profiles and Packet Loss Priorities*

## Multifield Classification Requirements and Restrictions

---

This topic covers the following information:

- [Supported Platforms on page 122](#)
- [CoS Tricolor Marking Requirement on page 122](#)
- [Restrictions on page 122](#)

### Supported Platforms

The **loss-priority** firewall filter action is supported on the following routing platforms only:

- M7i and M10i routers with the Enhanced CFEB (CFEB-E)
- M120 and M320 routers
- MX Series routers
- T Series routers
- PTX Series routers

### CoS Tricolor Marking Requirement

The **loss-priority** firewall filter action has platform-specific requirements dependencies on the CoS tricolor marking feature, as defined in RFC 2698:

- On an M320 router, you cannot commit a configuration that includes the **loss-priority** firewall filter action unless you enable the CoS tricolor marking feature.
- On all routing platforms that support the **loss-priority** firewall filter action, you cannot set the **loss-priority** firewall filter action to **medium-low** or **medium-high** unless you enable the CoS tricolor marking feature. .

To enable the CoS tricolor marking feature, include the **tri-color** statement at the **[edit class-of-service]** hierarchy level.

### Restrictions

You cannot configure the **loss-priority** and **three-color-policer** nonterminating actions for the same firewall filter term. These two nonterminating actions are mutually exclusive.



**NOTE:** On a PTX Series router, you must configure the **policer** action in a separate rule and not combine it with the rule configuring the **forwarding-class**, and **loss-priority** actions. See *Firewall and Policing Differences Between PTX Series Packet Transport Routers and T Series Matrix Routers*.

#### Related Documentation

- [Firewall Filter Nonterminating Actions](#)
- [Two-Color Policer Configuration Overview on page 53](#)
- [Multifield Classification Overview on page 119](#)

- [Multifield Classification Limitations on M Series Routers on page 123](#)
- [Example: Configuring Multifield Classification on page 125](#)
- **tri-color** statement

## Multifield Classification Limitations on M Series Routers

This topic covers the following information:

- [Problem: Output-Filter Matching on Input-Filter Classification on page 123](#)
- [Workaround: Configure All Actions in the Ingress Filter on page 124](#)

### Problem: Output-Filter Matching on Input-Filter Classification

On M Series routers (except M120 routers), you cannot classify packets with an output filter match based on the ingress classification that is set with an input filter applied to the same IPv4 logical interface.

For example, in the following configuration, the filter called **ingress** assigns all incoming IPv4 packets to the **expedited-forwarding** class. The filter called **egress** counts all packets that were assigned to the **expedited-forwarding** class in the **ingress** filter. This configuration does not work on most M Series routers. It works on all other routing platforms, including M120 routers, MX Series routers, and T Series routers.

```
[edit]
user@host # show firewall
family inet {
 filter ingress {
 term 1 {
 then {
 forwarding-class expedited-forwarding;
 accept;
 }
 }
 term 2 {
 then accept;
 }
 }
 filter egress {
 term 1 {
 from {
 forwarding-class expedited-forwarding;
 }
 then count ef;
 }
 term 2 {
 then accept;
 }
 }
}
[edit]
```

```
user@host# show interfaces
ge-1/2/0 {
 unit 0 {
 family inet {
 filter {
 input ingress;
 output egress;
 }
 }
 }
}
```

### Workaround: Configure All Actions in the Ingress Filter

As a workaround, you can configure all of the actions in the ingress filter.

```
user@host # show firewall
family inet {
 filter ingress {
 term 1 {
 then {
 forwarding-class expedited-forwarding;
 accept;
 count ef;
 }
 }
 term 2 {
 then accept;
 }
 }
}

[edit]
user@host# show interfaces
ge-1/2/0 {
 unit 0 {
 family inet {
 filter {
 input ingress;
 }
 }
 }
}
```

#### Related Documentation

- [Two-Color Policer Configuration Overview on page 53](#)
- [Multifield Classification Overview on page 119](#)
- [Multifield Classification Requirements and Restrictions on page 122](#)
- [Example: Configuring Multifield Classification on page 125](#)

## Example: Configuring Multifield Classification

This example shows how to configure multifield classification of IPv4 traffic by using firewall filter actions and two firewall filter policers.

- [Requirements on page 125](#)
- [Overview on page 126](#)
- [Configuration on page 127](#)
- [Verification on page 131](#)

### Requirements

Before you begin, make sure that your environment supports the features shown in this example:

1. The **loss-priority** firewall filter action must be supported on the router and configurable to all four values.
  - a. To be able to set a **loss-priority** firewall filter action, configure this example on logical interface **ge-1/2/0.0** on one of the following routing platforms:
    - MX Series router
    - M120 or M320 router
    - M7i or M10i router with the Enhanced CFEB (CFEB-E)
    - T Series router with Enhanced II Flexible PIC Concentrator (FPC)
  - b. To be able to set a **loss-priority** firewall filter action to **medium-low** or **medium-high**, make sure that the CoS tricolor marking feature is enabled. To enable the CoS tricolor marking feature, include the **tri-color** statement at the **[edit class-of-service]** hierarchy level.
2. The **expedited-forwarding** and **assured-forwarding** forwarding classes must be scheduled on the underlying physical interface **ge-1/2/0**.
  - a. Make sure that the following forwarding classes are assigned to output queues:
    - **expedited-forwarding**
    - **assured-forwarding**



**NOTE:** You cannot commit a configuration that assigns the same forwarding class to two different queues.



















**Results** From configuration mode, confirm your configuration by entering the **show interfaces**, **show class-of-service**, and **show firewall** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```

user@R1# show interfaces
ge-1/0/1 {
 description to-host;
 unit 0 {
 family inet {
 filter {
 input mf-classifier;
 }
 address 172.16.50.2/30;
 }
 }
}
ge-1/0/9 {
 description to-R2;
 unit 0 {
 family inet {
 address 10.30.0.1/30;
 }
 }
}

user@R1# show class-of-service
forwarding-classes {
 class BE-data queue-num 0;
 class Premium-data queue-num 1;
 class Voice queue-num 2;
 class NC queue-num 3;
}

user@R1# show firewall
family inet {
 filter mf-classifier {
 term BE-data {
 from {
 protocol tcp;
 port 80;
 }
 then forwarding-class BE-data;
 }
 term Premium-data {
 from {
 protocol tcp;
 port 12345;
 }
 then forwarding-class Premium-data;
 }
 term accept-all-else {
 then accept;
 }
 }
}

```

If you are done configuring the device, enter **commit** from configuration mode.

















```

 scheduler-map my-map;
 shaping-rate 100m;
 }
}
scheduler-maps {
 my-map {
 forwarding-class best-effort scheduler be;
 forwarding-class expedited-forwarding scheduler ef;
 forwarding-class network-control scheduler nc;
 forwarding-class assured-forwarding scheduler af;
 }
}
schedulers {
 be {
 transmit-rate percent 5;
 }
 ef {
 transmit-rate percent 30;
 }
 af {
 transmit-rate percent 30;
 }
 nc {
 transmit-rate percent 35;
 }
}

```

### Configuring Policer Overhead on the PIC or DPC That Hosts the Rate-Shaped Logical Interface

#### Step-by-Step Procedure

To configure policer overhead on the PIC or DPC that hosts the rate-shaped logical interface:

1. Enable configuration of the supported PIC or DPC.

```

[edit]
user@host# edit chassis fpc 1 pic 3

```

2. Configure 100 bytes of policer overhead on the supported PIC or DPC.

```

[edit chassis fpc 1 pic 3]
user@host# set ingress-policer-overhead 100
user@host# set egress-policer-overhead 100

```



**NOTE:** These values are added to the length of the final Ethernet frame when determining ingress and egress policer actions for all physical interfaces on the PIC or DPC.

You can specify policer overhead with values from 0 through 255 bytes.











Table 10: Three-Color Policer Configuration and Application Overview (*continued*)

| Policer Configuration | Layer 3 Application                                                                                                                                                                                                                                                                                                         | Key Points |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|                       | <pre>}<br/><br/>Apply the filter to a logical interface at the protocol<br/>family level:<br/><br/>[edit interfaces]<br/>interface-name {<br/>  unit unit-number {<br/>    family family-name {<br/>      filter {<br/>        input filter-name;<br/>        output filter-name;<br/>      }<br/>    }<br/>  }<br/>}</pre> |            |

























```

Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Transit statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps
Protocol inet, MTU: 1500, Generation: 242, Route table: 0
 Flags: Sendbroadcast-pkt-to-re
 Input Filters: filter-srtcm1ca-all
 Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
 Destination: 10.20.130/24, Local: 10.20.130.1, Broadcast: 10.20.130.255,

 Generation: 171
Protocol multiservice, MTU: Unlimited, Generation: 243, Route table: 0
 Policer: Input: __default_arp_policer__

```

- Related Documentation**
- [Three-Color Policer Configuration Overview on page 149](#)
  - [Single-Rate Three-Color Policer Overview on page 157](#)

- Related Documentation**
- [Statement Hierarchy for Configuring Policers on page 17](#)
  - [Three-Color Policer Configuration Overview on page 149](#)
  - [Three-Color Policer Configuration Guidelines on page 153](#)















information for the logical interface. Within that section, the **Input Filters** field displays the name of IPv4 firewall filters associated with the logical interface.

```
user@host> show interfaces ge-2/0/5.0 detail
Logical interface ge-2/0/5.0 (Index 105) (SNMP ifIndex 556) (Generation 170)
Flags: Device-Down SNMP-Traps 0x4004000 Encapsulation: ENET2
Traffic statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Local statistics:
 Input bytes : 0
 Output bytes : 0
 Input packets: 0
 Output packets: 0
Transit statistics:
 Input bytes : 0 0 bps
 Output bytes : 0 0 bps
 Input packets: 0 0 pps
 Output packets: 0 0 pps
Protocol inet, MTU: 1500, Generation: 242, Route table: 0
Flags: Sendbcst-pkt-to-re
Input Filters: filter-trtcm1ca-all
Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
Destination: 10.20.130/24, Local: 10.20.130.1, Broadcast: 10.20.130.255,

Generation: 171
Protocol multiservice, MTU: Unlimited, Generation: 243, Route table: 0
Policer: Input: __default_arp_policer__
```

**Related Documentation**

- [Two-Rate Three-Color Policer Overview on page 165](#)

**Related Documentation**

- [Statement Hierarchy for Configuring Policers on page 17](#)
- [Three-Color Policer Configuration Overview on page 149](#)
- [Three-Color Policer Configuration Guidelines on page 153](#)



## PART 5

# Configuring Logical and Physical Interface Traffic Policers at Layer 3

- [Two-Color and Three-Color Logical Interface Policers on page 175](#)
- [Two-Color and Three-Color Physical Interface Policers on page 189](#)



# Two-Color and Three-Color Logical Interface Policers

- [Logical Interface \(Aggregate\) Policer Overview on page 175](#)
- [Example: Configuring a Two-Color Logical Interface \(Aggregate\) Policer on page 176](#)
- [Example: Configuring a Three-Color Logical Interface \(Aggregate\) Policer on page 181](#)

## Logical Interface (Aggregate) Policer Overview

---

A *logical interface policer*—also called an *aggregate policer*—is a two-color or three-color policer that defines traffic rate limiting that you can apply to input or output traffic for multiple protocol families on the same logical interface without creating multiple instances of the policer.

To configure a single-rate two-color logical interface policer, include the **logical-interface-policer** statement at one of the following hierarchy levels:

- [edit firewall **policer policer-name**]
- [edit logical-systems *logical-system-name* firewall **policer policer-name**]

To configure a single-rate or two-rate three-color logical interface policer, include the **logical-interface-policer** statement at one of the following hierarchy levels:

- [edit firewall **three-color-policer name**]
- [edit logical-systems *logical-system-name* firewall **three-color-policer name**]



**NOTE:** A three-color policer can be applied to Layer 2 traffic as a logical interface policer only. You cannot apply a three-color policer to Layer 2 traffic as a physical interface policer (through a firewall filter).

You apply a logical interface policer to Layer 3 traffic directly to the interface configuration at the logical unit level (to rate-limit all traffic types, regardless of the protocol family) or at the protocol family level (to rate-limit traffic of a specific protocol family). You cannot reference a logical interface policer from a stateless firewall filter term and then apply the filter to a logical interface.

You can apply a logical interface policer to unicast traffic only. For information about configuring a stateless firewall filter for flooded traffic, see “*Applying Forwarding Table Filters*” in the “Traffic Sampling, Forwarding, and Monitoring” section of the *Routing Policies, Firewall Filters, and Traffic Policers Feature Guide for Routing Devices*.

To display a logical interface policer on a particular interface, issue the **show interfaces policers** operational mode command.

#### Related Documentation

- [Two-Color Policer Configuration Overview on page 53](#)
- [Three-Color Policer Configuration Overview on page 149](#)
- [Example: Configuring a Two-Color Logical Interface \(Aggregate\) Policer on page 176](#)
- [Example: Configuring a Three-Color Logical Interface \(Aggregate\) Policer on page 46](#)
- [interface-specific \(Firewall Filters\)](#)
- [logical-interface-policer on page 237](#)

---

### Example: Configuring a Two-Color Logical Interface (Aggregate) Policer

---

This example shows how to configure a single-rate two-color policer as a logical interface policer and apply it to incoming IPv4 traffic on a logical interface.

- [Requirements on page 176](#)
- [Overview on page 176](#)
- [Configuration on page 177](#)
- [Verification on page 180](#)

#### Requirements

Before you begin, make sure that the logical interface to which you apply the two-color logical interface policer is hosted on a Gigabit Ethernet interface (**ge-**) or a 10-Gigabit Ethernet interface (**xe-**).

#### Overview

In this example, you configure the single-rate two-color policer **policer\_IFL** as a logical interface policer and apply it to incoming IPv4 traffic at logical interface **ge-1/3/1.0**.

---

#### Topology

---

If the input IPv4 traffic on the physical interface **ge-1/3/1** exceeds the bandwidth limit equal to 90 percent of the media rate with a 300 KB burst-size limit, then the logical interface policer **policer\_IFL** rate-limits the input IPv4 traffic on the logical interface **ge-1/3/1.0**. Configure the policer to mark nonconforming traffic by setting packet loss priority (PLP) levels to **high** and classifying packets as **best-effort**.

As the incoming IPv4 traffic rate on the physical interface slows and conforms to the configured limits, Junos OS stops marking the incoming IPv4 packets at the logical interface.

## Configuration

The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see *Using the CLI Editor in Configuration Mode*.

To configure this example, perform the following tasks:

- [Configuring the Logical Interfaces on page 177](#)
- [Configuring the Single-Rate Two-Color Policer as a Logical Interface Policer on page 178](#)
- [Applying the Logical Interface Policer to Input IPv4 Traffic at a Logical Interface on page 179](#)

**CLI Quick Configuration** To quickly configure this example, copy the following configuration commands into a text file, remove any line breaks, and then paste the commands into the CLI at the **[edit]** hierarchy level.

```
set interfaces ge-1/3/1 vlan-tagging
set interfaces ge-1/3/1 unit 0 vlan-id 100
set interfaces ge-1/3/1 unit 0 family inet address 10.10.10.1/30
set interfaces ge-1/3/1 unit 1 vlan-id 101
set interfaces ge-1/3/1 unit 1 family inet address 20.20.20.1/30 arp 20.20.20.2 mac
 00:00:11:22:33:44
set firewall policer policer_IFL logical-interface-policer
set firewall policer policer_IFL if-exceeding bandwidth-percent 90
set firewall policer policer_IFL if-exceeding burst-size-limit 300k
set firewall policer policer_IFL then loss-priority high
set firewall policer policer_IFL then forwarding-class best-effort
set interfaces ge-1/3/1 unit 0 family inet policer input policer_IFL
```

### Configuring the Logical Interfaces

**Step-by-Step Procedure** To configure the logical interfaces:

1. Enable configuration of the interface.  

```
[edit]
user@host# edit interfaces ge-1/3/1
```
2. Configure single tagging.  

```
[edit interfaces ge-1/3/1]
user@host# set vlan-tagging
```
3. Configure logical interface **ge-1/3/1.0**.  

```
[edit interfaces ge-1/3/1]
user@host# set unit 0 vlan-id 100
user@host# set unit 0 family inet address 10.10.10.1/30
```
4. Configure logical interface **ge-1/3/1.1**.  

```
[edit interfaces ge-1/3/1]
user@host# set unit 1 vlan-id 101
user@host# set unit 1 family inet address 20.20.20.1/30 arp 20.20.20.2 mac
 00:00:11:22:33:44
```

**Results** Confirm the configuration of the logical interfaces by entering the **show interfaces** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show interfaces
ge-1/3/1 {
 vlan-tagging;
 unit 0 {
 vlan-id 100;
 family inet {
 address 10.10.10.1/30;
 }
 }
 unit 1 {
 vlan-id 101;
 family inet {
 address 20.20.20.1/30 {
 arp 20.20.20.2 mac 00:00:11:22:33:44;
 }
 }
 }
}
```

---

### Configuring the Single-Rate Two-Color Policer as a Logical Interface Policer

---

**Step-by-Step Procedure** To configure a single-rate two-color policer as a logical interface policer:

1. Enable configuration of a single-rate two-color policer.

```
[edit]
user@host# edit firewall policer policer_IFL
```

2. Specify that the policer is a logical interface (aggregate) policer.

```
[edit firewall policer policer_IFL]
user@host# set logical-interface-policer
```

A logical interface policer rate-limits traffic based on a percentage of the media rate of the physical interface underlying the logical interface to which the policer is applied. The policer is applied directly to the interface rather than referenced by a firewall filter.

3. Specify the policer traffic limits.
  - a. Specify the bandwidth limit.
    - To specify the bandwidth limit as an absolute rate, from 8,000 bits per second through 50,000,000,000 bits per second, include the **bandwidth-limit *bps*** statement.
    - To specify the bandwidth limit as a percentage of the physical port speed on the interface, include the **bandwidth-percent *percent*** statement.

In this example, the CLI commands and output are based on a bandwidth limit specified as a percentage rather than as an absolute rate.

```
[edit firewall policer policer_IFL]
user@host# set if-exceeding bandwidth-percent 90
```

- b. Specify the burst-size limit, from 1,500 bytes through 100,000,000,000 bytes, which is the maximum packet size to be permitted for bursts of data that exceed the specified bandwidth limit.

```
[edit firewall policer policer_IFL]
user@host# set if-exceeding burst-size-limit 300k
```

4. Specify the policer actions to be taken on traffic that exceeds the configured rate limits.
  - To discard the packet, include the **discard** statement.
  - To set the loss-priority value of the packet, include the **loss-priority (low | medium-low | medium-high | high)** statement.
  - To classify the packet to a forwarding class, include the **forwarding-class (forwarding-class | assured-forwarding | best-effort | expedited-forwarding | network-control)** statement.

In this example, the CLI commands and output are based on both setting the packet loss priority level and classifying the packet.

```
[edit firewall policer policer_IFL]
user@host# set then loss-priority high
user@host# set then forwarding-class best-effort
```

**Results** Confirm the configuration of the policer by entering the **show firewall** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show firewall
policer policer_IFL {
 logical-interface-policer;
 if-exceeding {
 bandwidth-percent 90;
 burst-size-limit 300k;
 }
 then {
 loss-priority high;
 forwarding-class best-effort;
 }
}
```

### Applying the Logical Interface Policer to Input IPv4 Traffic at a Logical Interface

**Step-by-Step Procedure** To apply the two-color logical interface policer to input IPv4 traffic a logical interface:

1. Enable configuration of the logical interface.

```
[edit]
```

```
user@host# edit interfaces ge-1/3/1 unit 0
```

2. Apply the policer to all traffic types or to a specific traffic type on the logical interface.

- To apply the policer to all traffic types, regardless of the protocol family, include the **policer (input | output) *policer-name*** statement at the **[edit interfaces *interface-name* unit *number*]** hierarchy level.
- To apply the policer to traffic of a specific protocol family, include the **policer (input | output) *policer-name*** statement at the **[edit interfaces *interface-name* unit *unit-number* family *family-name*]** hierarchy level.

To apply the logical interface policer to incoming packets, use the **policer input *policer-name*** statement. To apply the logical interface policer to outgoing packets, use the **policer output *policer-name*** statement.

In this example, the CLI commands and output are based on rate-limiting the IPv4 input traffic at logical interface **ge-1/3/1.0**.

```
[edit interfaces ge-1/3/1 unit 0]
user@host# set family inet policer input policer_IFL
```

**Results** Confirm the configuration of the interface by entering the **show interfaces** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show interfaces
ge-1/3/1 {
 vlan-tagging;
 unit 0 {
 vlan-id 100;
 family inet {
 policer input policer_IFL;
 address 10.10.10.1/30;
 }
 }
 unit 1 {
 vlan-id 101;
 family inet {
 address 20.20.20.1/30 {
 arp 20.20.20.2 mac 00:00:11:22:33:44;
 }
 }
 }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

## Verification

Confirm that the configuration is working properly.

- [Displaying Traffic Statistics and Policers for the Logical Interface on page 181](#)
- [Displaying Statistics for the Policer on page 181](#)

### Displaying Traffic Statistics and Policers for the Logical Interface

---

**Purpose** Verify the traffic flow through the logical interface and that the policer is evaluated when packets are received on the logical interface.

**Action** Use the **show interfaces** operational mode command for logical interface **ge-1/3/1.0**, and include the **detail** or **extensive** option. The command output section for **Traffic statistics** lists the number of bytes and packets received and transmitted on the logical interface. The **Protocol inet** subsection contains a **Policer** field that would list the policer **policer\_IFL** as an input or output logical interface policer as follows:

- **Input:** **policer\_IFL-ge-1/3/1.0-log\_int-i**
- **Output:** **policer\_IFL-ge-1/3/1.0-log\_int-o**

The **log\_int-i** suffix denotes a logical interface policer applied to input traffic, while the **log\_int-o** suffix denotes a logical interface policer applied to output traffic. In this example, the logical interface policer is applied to input traffic only.

### Displaying Statistics for the Policer

---

**Purpose** Verify the number of packets evaluated by the policer.

**Action** Use the **show policer** operational mode command and optionally specify the name of the policer. The command output displays the number of packets evaluated by each configured policer (or the specified policer), in each direction. For the policer **policer\_IFL**, the input and output policer names are displayed as follows:

- **policer\_IFL-ge-1/3/1.0-log\_int-i**
- **policer\_IFL-ge-1/3/1.0-log\_int-o**

The **log\_int-i** suffix denotes a logical interface policer applied to input traffic, while the **log\_int-o** suffix denotes a logical interface policer applied to output traffic. In this example, the logical interface policer is applied to input traffic only.

- Related Documentation**
- [Two-Color Policer Configuration Overview on page 53](#)
  - [Logical Interface \(Aggregate\) Policer Overview on page 175](#)

## Example: Configuring a Three-Color Logical Interface (Aggregate) Policer

---

This example shows how to configure a two-rate three-color color-blind policer as a logical interface (aggregate) policer and apply the policer directly to Layer 2 input traffic at a supported logical interface.

- [Requirements on page 182](#)
- [Overview on page 182](#)

- [Configuration on page 183](#)
- [Verification on page 186](#)

## Requirements

Before you begin, make sure that the logical interface to which you apply the three-color logical interface policer is hosted on a Gigabit Ethernet interface (**ge-**) or a 10-Gigabit Ethernet interface (**xe-**) on an MX Series router.

## Overview

A two-rate three-color policer meters a traffic flow against a bandwidth limit and burst-size limit for guaranteed traffic, plus a second set of bandwidth and burst-size limits for peak traffic. Traffic that conforms to the limits for guaranteed traffic is categorized as green, and nonconforming traffic falls into one of two categories:

- Nonconforming traffic that does not exceed the bandwidth and burst-size limits for peak traffic is categorized as yellow.
- Nonconforming traffic that exceeds the bandwidth and burst-size limits for peak traffic is categorized as red.

A logical interface policer defines traffic rate-limiting rules that you can apply to multiple protocol families on the same logical interface without creating multiple instances of the policer.



**NOTE:** You apply a logical interface policer directly to a logical interface at the logical unit level, and not by referencing the policer in a stateless firewall filter and then applying the filter to the logical interface at the protocol family level.

---

## Topology

In this example, you configure the two-rate three-color policer **trTCM2-cb** as a color-blind logical interface policer and apply the policer to incoming Layer 2 traffic on logical interface **ge-1/3/1.0**.



**NOTE:** When using a three-color policer to rate-limit Layer 2 traffic, color-aware policing can be applied to egress traffic only.

The policer defines guaranteed traffic rate limits such that traffic that conforms to the bandwidth limit of 40 Mbps with a 100 KB allowance for traffic bursting (based on the token-bucket formula) is categorized as green. As with any policed traffic, the packets in a green flow are implicitly set to a **low** loss priority and then transmitted.

Nonconforming traffic that falls within the peak traffic limits of a 60 Mbps bandwidth limit and a 200 KB allowance for traffic bursting (based on the token-bucket formula) is categorized as yellow. The packets in a yellow traffic flow are implicitly set to a **medium-high** loss priority and then transmitted.

Nonconforming traffic that exceeds the peak traffic limits are categorized as red. The packets in a red traffic flow are implicitly set to a **high** loss priority. In this example, the optional policer action for red traffic (**loss-priority high then discard**) is configured, so packets in a red traffic flow are discarded instead of transmitted.

## Configuration

The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see *Using the CLI Editor in Configuration Mode*.

To configure this example, perform the following tasks:

- [Configuring the Logical Interfaces on page 183](#)
- [Configuring the Two-Rate Three-Color Policer as a Logical Interface Policer on page 184](#)
- [Applying the Three-Color Policer to the Layer 2 Input at the Logical Interface on page 185](#)

### CLI Quick Configuration

To quickly configure this example, copy the following configuration commands into a text file, remove any line breaks, and then paste the commands into the CLI at the **[edit]** hierarchy level.

```
set interfaces ge-1/3/1 vlan-tagging
set interfaces ge-1/3/1 unit 0 vlan-id 100
set interfaces ge-1/3/1 unit 0 family inet address 10.10.10.1/30
set interfaces ge-1/3/1 unit 1 vlan-id 101
set interfaces ge-1/3/1 unit 1 family inet address 20.20.20.1/30 arp 20.20.20.2 mac
00:00:11:22:33:44
set firewall three-color-policer trTCM2-cb logical-interface-policer
set firewall three-color-policer trTCM2-cb two-rate color-blind
set firewall three-color-policer trTCM2-cb two-rate committed-information-rate 40m
set firewall three-color-policer trTCM2-cb two-rate committed-burst-size 100k
set firewall three-color-policer trTCM2-cb two-rate peak-information-rate 60m
set firewall three-color-policer trTCM2-cb two-rate peak-burst-size 200k
set firewall three-color-policer trTCM2-cb action loss-priority high then discard
set interfaces ge-1/3/1 unit 0 layer2-policer input-three-color trTCM2-cb
```

### Configuring the Logical Interfaces

#### Step-by-Step Procedure

To configure the logical interfaces:

1. Enable configuration of the interface.  

```
[edit]
user@host# edit interfaces ge-1/3/1
```
2. Configure single tagging.  

```
[edit interfaces ge-1/3/1]
user@host# set vlan-tagging
```
3. Configure logical interface **ge-1/3/1.0**.  

```
[edit interfaces ge-1/3/1]
user@host# set unit 0 vlan-id 100
user@host# set unit 0 family inet address 10.10.10.1/30
```

4. Configure logical interface **ge-1/3/1.0**.

```
[edit interfaces ge-1/3/1]
user@host# set unit 1 vlan-id 101
user@host# set unit 1 family inet address 20.20.20.1/30 arp 20.20.20.2 mac
00:00:11:22:33:44
```

**Results** Confirm the configuration of the logical interfaces by entering the **show interfaces** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show interfaces
ge-1/3/1 {
 vlan-tagging;
 unit 0 {
 vlan-id 100;
 family inet {
 address 10.10.10.1/30;
 }
 }
 unit 1 {
 vlan-id 101;
 family inet {
 address 20.20.20.1/30 {
 arp 20.20.20.2 mac 00:00:11:22:33:44;
 }
 }
 }
}
```

---

### Configuring the Two-Rate Three-Color Policer as a Logical Interface Policer

---

#### Step-by-Step Procedure

To configure the two-rate three-color policer as a logical interface policer:

1. Enable configuration of a three-color policer.

```
[edit]
user@host# edit firewall three-color-policer trTCM2-cb
```

2. Specify that the policer is a logical interface (aggregate) policer.

```
[edit firewall three-color-policer trTCM2-cb]
user@host# set logical-interface-policer
```

A logical interface policer rate-limits traffic based on a percentage of the media rate of the physical interface underlying the logical interface to which the policer is applied, and the policer is applied directly to the interface rather than referenced by a firewall filter.

3. Specify that the policer is two-rate and color-blind.

```
[edit firewall three-color-policer trTCM2-cb]
user@host# set two-rate color-blind
```

A color-aware three-color policer takes into account any coloring markings that might have been set for a packet by another traffic policer configured at a previous

network node, and any preexisting color markings are used in determining the appropriate policing action for the packet.

Because you are applying this three-color policer applied to input at Layer 2, you must configure the policer to be color-blind.

4. Specify the policer traffic limits used to classify a green traffic flow.

```
[edit firewall three-color-policer trTCM2-cb]
user@host# set two-rate committed-information-rate 40m
user@host# set two-rate committed-burst-size 100k
```

5. Specify the additional policer traffic limits used to classify a yellow or red traffic flow.

```
[edit firewall three-color-policer trTCM2-cb]
user@host# set two-rate peak-information-rate 60m
user@host# set two-rate peak-burst-size 200k
```

6. (Optional) Specify the configured policer action for packets in a red traffic flow.

```
[edit firewall three-color-policer trTCM2-cb]
user@host# set action loss-priority high then discard
```

In color-aware mode, the three-color policer configured action can increase the packet loss priority (PLP) level of a packet, but never decrease it. For example, if a color-aware three-color policer meters a packet with a medium PLP marking, it can raise the PLP level to high, but cannot reduce the PLP level to low.

**Results** Confirm the configuration of the three-color policer by entering the **show firewall** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show firewall
three-color-policer trTCM2-cb {
 logical-interface-policer;
 action {
 loss-priority high then discard;
 }
 two-rate {
 color-blind;
 committed-information-rate 40m;
 committed-burst-size 100k;
 peak-information-rate 60m;
 peak-burst-size 200k;
 }
}
```

### Applying the Three-Color Policer to the Layer 2 Input at the Logical Interface

#### Step-by-Step Procedure

To apply the three-color policer to the Layer 2 input at the logical interface:

1. Enable application of Layer 2 logical interface policers.

```
[edit]
user@host# edit interfaces ge-1/3/1 unit 0
```

2. Apply the three-color logical interface policer to a logical interface input.

```
[edit interfaces ge-1/3/1 unit 0]
user@host# set layer2-policerinput-three-color trTCM2-cb
```

**Results** Confirm the configuration of the logical interfaces by entering the **show interfaces** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show interfaces
ge-1/3/1 {
 vlan-tagging;
 unit 0 {
 vlan-id 100;
 layer2-policer {
 input-three-color trTCM2-cb;
 }
 family inet {
 address 10.10.10.1/30;
 }
 }
 unit 1 {
 vlan-id 101;
 family inet {
 address 20.20.20.1/30 {
 arp 20.20.20.2 mac 00:00:11:22:33:44;
 }
 }
 }
}
```

If you are done configuring the device, enter **commit** from configuration mode.

## Verification

Confirm that the configuration is working properly.

- [Displaying Traffic Statistics and Policers for the Logical Interface on page 186](#)
- [Displaying Statistics for the Policer on page 187](#)

### Displaying Traffic Statistics and Policers for the Logical Interface

**Purpose** Verify the traffic flow through the logical interface and that the policer is evaluated when packets are received on the logical interface.

**Action** Use the **show interfaces** operational mode command for logical interface **ge-1/3/1.0**, and include the **detail** or **extensive** option. The command output section for **Traffic statistics** lists the number of bytes and packets received and transmitted on the logical interface, and the **Protocol inet** section contains a **Policer** field that would list the policer **trTCM2-cb** as an input or output policer as follows:

- Input: trTCM2-cb-ge-1/3/1.0-log\_int-i

- Output: `trTCM2-cb-ge-1/3/1.0-log_int-o`

The `log_int-i` suffix denotes a logical interface policer applied to input traffic, while the `log_int-o` suffix denotes a logical interface policer applied to output traffic. In this example, the logical interface policer is applied to in the input direction only.

### Displaying Statistics for the Policer

**Purpose** Verify the number of packets evaluated by the policer.

**Action** Use the `show policer` operational mode command and optionally specify the name of the policer. The command output displays the number of packets evaluated by each configured policer (or the specified policer), in each direction. For the policer `trTCM2-cb`, the input and output policer names are displayed as follows:

- `trTCM2-cb-ge-1/3/1.0-log_int-i`
- `trTCM2-cb-e-1/3/1.0-log_int-o`

The `log_int-i` suffix denotes a logical interface policer applied to input traffic, while the `log_int-o` suffix denotes a logical interface policer applied to output traffic. In this example, the logical interface policer is applied to input traffic only.

**Related Documentation**

- [Logical Interface \(Aggregate\) Policer Overview on page 175](#)
- [Example: Configuring a Two-Color Logical Interface \(Aggregate\) Policer on page 176](#)
- [Three-Color Policing at Layer 2 Overview on page 45](#)
- [layer2-policer on page 235](#) statement
- [logical-interface-policer on page 237](#) statement
- [three-color-policer \(Configuring\) on page 254](#) statement

**Related Documentation**

- [Statement Hierarchy for Configuring Policers on page 17](#)
- [Two-Color Policer Configuration Overview on page 53](#)
- [Three-Color Policer Configuration Overview on page 149](#)
- [Guidelines for Applying Traffic Policers on page 19](#)



# Two-Color and Three-Color Physical Interface Policers

- [Physical Interface Policer Overview on page 189](#)
- [Example: Configuring a Physical Interface Policer for Aggregate Traffic at a Physical Interface on page 191](#)

## Physical Interface Policer Overview

---

A *physical interface policer* is a two-color or three-color policer that defines traffic rate limiting that you can apply to input or output traffic for all the logical interfaces and protocol families configured on a physical interface, even if the logical interfaces belong to different routing instances. This feature is useful when you want to perform aggregate policing for different protocol families and different logical interfaces on the same physical interface.

For example, suppose that a provider edge (PE) router has numerous logical interfaces, each corresponding to a different customer, configured on the same link to a customer edge (CE) device. Now suppose that a customer wants to apply one set of rate limits aggregately for certain types of traffic on a single physical interface. To accomplish this, you could apply a single physical interface policer to the physical interface, which rate-limits all the logical interfaces configured on the interface and all the routing instances to which those interfaces belong.

To configure a single-rate two-color physical interface policer, include the **physical-interface-policer** statement at one of the following hierarchy levels:

- [edit firewall **policer** *policer-name*]
- [edit logical-system *logical-system-name* firewall **policer** *policer-name*]
- [edit routing-instances *routing-instance-name* firewall **policer** *policer-name*]
- [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* firewall **policer** *policer-name*]

To configure a single-rate or two-rate three-color physical interface policer, include the **physical-interface-policer** statement at one of the following hierarchy levels:

- [edit firewall **three-color-policer** *policer-name*]
- [edit logical-system *logical-system-name* firewall **three-color-policer** *policer-name*]
- [edit routing-instances *routing-instance-name* firewall **three-color-policer** *policer-name*]
- [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* firewall **three-color-policer** *policer-name*]

You apply a physical interface policer to Layer 3 traffic by referencing the policer from a stateless firewall filter term and then applying the filter to a logical interface. You cannot apply a physical interface to Layer 3 traffic directly to the interface configuration.

To reference a single-rate two-color policer from a stateless firewall filter term, use the **policer** nonterminating action. To reference a single-rate or two-rate three-color policer from a stateless firewall filter term, use the **three-color-policer** nonterminating action.

The following requirements apply to a stateless firewall filter that references a physical interface policer:

- You must configure the firewall filter for a specific, supported protocol family: **ipv4**, **ipv6**, **mpls**, **vpls**, or circuit cross-connect (**ccc**), but not for **family any**.
- You must configure the firewall filter as a *physical interface filter* by including the **physical-interface-filter** statement at the [edit firewall family *family-name* filter *filter-name*] hierarchy level.
- A firewall filter that is defined as a physical interface filter can reference a physical interface policer only.
- A firewall filter that is defined as a physical interface filter cannot reference a policer configured with the **interface-specific** statement.
- You cannot configure a firewall filter as both a physical interface filter and as a logical interface filter that also includes the **interface-specific** statement.

#### Related Documentation

- [Two-Color Policer Configuration Overview on page 53](#)
- [Three-Color Policer Configuration Overview on page 149](#)
- [Example: Configuring a Physical Interface Policer for Aggregate Traffic at a Physical Interface on page 191](#)
- [physical-interface-filter on page 245](#)
- [physical-interface-policer on page 246](#)

## Example: Configuring a Physical Interface Policer for Aggregate Traffic at a Physical Interface

---

This example shows how to configure a single-rate two-color policer as a physical interface policer.

- [Requirements on page 191](#)
- [Overview on page 191](#)
- [Configuration on page 192](#)
- [Verification on page 196](#)

### Requirements

No special configuration beyond device initialization is required before configuring this example.

### Overview

A *physical interface policer* specifies rate-limiting for aggregate traffic, which encompasses all protocol families and logical interfaces configured on a physical interface, even if the interfaces belong to different routing instances.

You can apply a physical interface policer to Layer 3 input or output traffic only by referencing the policer from a stateless firewall filter that is configured for specific a specific protocol family (not for **family any**) and configured as a physical interface filter. You configure the filter terms with match conditions that select the types of packets you want to rate-limit, and you specify the physical interface policer as the action to apply to matched packets.

### Topology

---

The physical interface policer in this example, **shared-policer-A**, rate-limits to 10,000,000 bps and permits a maximum burst of traffic of 500,000 bytes. You configure the policer to discard packets in nonconforming flows, but you could instead configure the policer to re-mark nonconforming traffic with a forwarding class, a packet loss priority (PLP) level, or both.

To be able to use the policer to rate-limit IPv4 traffic, you reference the policer from an IPv4 physical interface filter. For this example, you configure the filter to pass the policer IPv4 packets that meet either of the following match terms:

- Packets received through TCP and with the IP precedence fields **critical-ecp** (0xa0), **immediate** (0x40), or **priority** (0x20)
- Packets received through TCP and with the IP precedence fields **internet-control** (0xc0) or **routine** (0x00)

You could also reference the policer from physical interface filters for other protocol families.

## Configuration

The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see *Using the CLI Editor in Configuration Mode*.

To configure this example, perform the following tasks:

- [Configuring the Logical Interfaces on the Physical Interface on page 192](#)
- [Configuring a Physical Interface Policer on page 193](#)
- [Configuring an IPv4 Physical Interface Filter on page 194](#)
- [Applying the IPv4 Physical interface Filter to a Physical Interface on page 195](#)

### CLI Quick Configuration

To quickly configure this example, copy the following configuration commands into a text file, remove any line breaks, and then paste the commands into the CLI at the **[edit]** hierarchy level.

```
set interfaces so-1/0/0 unit 0 family inet address 192.168.1.1/24
set interfaces so-1/0/0 unit 0 family vpls
set interfaces so-1/0/0 unit 1 family mpls
set firewall policer shared-policer-A physical-interface-policer
set firewall policer shared-policer-A if-exceeding bandwidth-limit 100m burst-size-limit 500k
set firewall policer shared-policer-A then discard
set firewall family inet filter ipv4-filter physical-interface-filter
set firewall family inet filter ipv4-filter term tcp-police-1 from precedence [critical-ecp immediate priority]
set firewall family inet filter ipv4-filter term tcp-police-1 from protocol tcp
set firewall family inet filter ipv4-filter term tcp-police-1 then policer shared-policer-A
set firewall family inet filter ipv4-filter term tcp-police-2 from precedence [internet-control routine]
set firewall family inet filter ipv4-filter term tcp-police-2 from protocol tcp
set firewall family inet filter ipv4-filter term tcp-police-2 then policer shared-policer-A
set interfaces so-1/0/0 unit 0 family inet filter input ipv4-filter
```

### Configuring the Logical Interfaces on the Physical Interface

#### Step-by-Step Procedure

To configure the logical interfaces on the physical interface:

1. Enable configuration of logical interfaces.  
  
[edit]  
user@host# edit interfaces so-1/0/0
2. Configure protocol families on logical unit 0.  
  
[edit interfaces so-1/0/0]  
user@host# set unit 0 family inet address 192.168.1.1/24  
user@host# set unit 0 family vpls
3. Configure protocol families on logical unit 1.  
  
[edit interfaces so-1/0/0]  
user@host# set unit 1 family mpls

**Results** Confirm the configuration of the firewall filter by entering the **show interfaces** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show interfaces
so-1/0/0 {
 unit 0 {
 family inet {
 address 192.168.1.1/24;
 }
 family vpls;
 }
 unit 1 {
 family mpls;
 }
}
```

### Configuring a Physical Interface Policer

#### Step-by-Step Procedure

To configure a physical interface policer:

1. Enable configuration of the two-color policer.

```
[edit]
user@host# edit firewall policer shared-policer-A
```

2. Configure the type of two-color policer.

```
[edit firewall policer shared-policer-A]
user@host# set physical-interface-policer
```

3. Configure the traffic limits and the action for packets in a nonconforming traffic flow.

```
[edit firewall policer shared-policer-A]
user@host# set if-exceeding bandwidth-limit 100m burst-size-limit 500k
user@host# set then discard
```

For a physical interface filter, the actions you can configure for packets in a nonconforming traffic flow are to discard the packets, assign a forwarding class, assign a PLP value, or assign both a forwarding class and a PLP value.

**Results** Confirm the configuration of the policer by entering the **show firewall** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show firewall
policer shared-policer-A {
 physical-interface-policer;
 if-exceeding {
 bandwidth-limit 100m;
 burst-size-limit 500k;
 }
 then discard;
}
```

### Configuring an IPv4 Physical Interface Filter

- Step-by-Step Procedure** To configure a physical interface policer as the action for terms in an IPv4 physical interface policer:
1. Configure a standard stateless firewall filter under a specific protocol family.  

```
[edit]
user@host# edit firewall family inet filter ipv4-filter
```

You cannot configure a physical interface firewall filter for **family any**.
  2. Configure the filter as a physical interface filter so that you can apply the physical interface policer as an action.  

```
[edit firewall family inet filter ipv4-filter]
user@host# set physical-interface-filter
```
  3. Configure the first term to match IPv4 packets received through TCP with the IP precedence fields **critical-ecp**, **immediate**, or **priority** and to apply the physical interface policer as a filter action.  

```
[edit firewall family inet filter ipv4-filter]
user@host# set term tcp-police-1 from precedence [critical-ecp immediate priority]
user@host# set term tcp-police-1 from protocol tcp
user@host# set term tcp-police-1 then policer shared-policer-A
```
  4. Configure the first term to match IPv4 packets received through TCP with the IP precedence fields **internet-control** or **routine** and to apply the physical interface policer as a filter action.  

```
[edit firewall family inet filter ipv4-filter]
user@host# set term tcp-police-2 from precedence [internet-control routine]
user@host# set term tcp-police-2 from protocol tcp
user@host# set term tcp-police-2 then policer shared-policer-A
```

**Results** Confirm the configuration of the firewall filter by entering the **show firewall** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```
[edit]
user@host# show firewall
family inet {
 filter ipv4-filter {
 physical-interface-filter;
 term tcp-police-1 {
 from {
 precedence [critical-ecp immediate priority];
 protocol tcp;
 }
 then policer shared-policer-A;
 }
 }
 term tcp-police-2 {
 from {
 precedence [internet-control routine];
 protocol tcp;
 }
 }
}
```

```

 }
 then policer shared-policer-A;
 }
}
}
policer shared-policer-A {
 physical-interface-policer;
 if-exceeding {
 bandwidth-limit 100m;
 burst-size-limit 500k;
 }
 then discard;
}
}

```

### Applying the IPv4 Physical interface Filter to a Physical Interface

#### Step-by-Step Procedure

To apply the physical interface filter to a physical interface:

1. Enable configuration of IPv4 on the logical interface.

```

[edit]
user@host# edit interfaces so-1/0/0 unit 0 family inet

```

2. Apply the IPv4 physical interface filter in the input direction.

```

[edit interfaces so-1/0/0 unit 0 family inet]
user@host# set filter input ipv4-filter

```

#### Results

Confirm the configuration of the firewall filter by entering the **show interfaces** configuration mode command. If the command output does not display the intended configuration, repeat the instructions in this procedure to correct the configuration.

```

[edit]
user@host# show interfaces
so-1/0/0 {
 unit 0 {
 family inet {
 filter {
 input ipv4-filter;
 }
 address 192.168.1.1/24;
 }
 family vpls;
 }
 unit 1 {
 family mpls;
 }
}

```

If you are done configuring the device, enter **commit** from configuration mode.

## Verification

Confirm that the configuration is working properly.

- [Displaying the Firewall Filters Applied to an Interface on page 196](#)
- [Displaying the Number of Packets Processed by the Policer at the Logical Interface on page 196](#)

### Displaying the Firewall Filters Applied to an Interface

**Purpose** Verify that the firewall filter **ipv4-filter** is applied to the IPv4 input traffic at logical interface **so-1/0/0.0**.

**Action** Use the **show interfaces statistics** operational mode command for logical interface **so-1/0/0.0**, and include the **detail** option. In the **Protocol inet** section of the command output, the **Input Filters** field shows that the firewall filter **ipv4-filter** is applied in the input direction.

```
user@host> show interfaces statistics so-1/0/0 detail
Logical interface so-1/0/0.0 (Index 79) (SNMP ifIndex 510) (Generation 149)
Flags: Hardware-Down Point-To-Point SNMP-Traps 0x4000 Encapsulation: PPP
Protocol inet, MTU: 4470, Generation: 173, Route table: 0
Flags: Sendbcst-pkt-to-re, Protocol-Down
Input Filters: ipv4-filter
Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
Destination: 10.39/16, Local: 10.39.1.1, Broadcast: 10.39.255.255,
Generation: 163
```

### Displaying the Number of Packets Processed by the Policer at the Logical Interface

**Purpose** Verify the traffic flow through the logical interface and that the policer is evaluated when packets are received on the logical interface.

**Action** Use the **show firewall** operational mode command for the filter you applied to the logical interface.

```
user@host> show firewall filter ipv4-filter
Filter: ipv4-filter
Policers:
Name Packets
shared-policer-A-tcp-police-1 32863
shared-policer-A-tcp-police-2 3870
```

The command output displays the name of policer (**shared-policer-A**), the name of the filter term (**police-1**) under which the policer action is specified, and the number of packets that matched the filter term. This is only the number of out-of-specification (out-of-spec) packet counts, not all packets policed by the policer.

- Related Documentation**
- [Firewall Filter Match Conditions Based on Numbers or Text Aliases](#)
  - [Firewall Filter Match Conditions Based on Bit-Field Values](#)
  - [Firewall Filter Match Conditions Based on Address Fields](#)

- *Firewall Filter Match Conditions Based on Address Classes*
- [Two-Color Policer Configuration Overview on page 53](#)
- [Physical Interface Policer Overview on page 189](#)

**Related  
Documentation**

- *Firewall Filter Match Conditions Based on Numbers or Text Aliases*
- *Firewall Filter Match Conditions Based on Bit-Field Values*
- *Firewall Filter Match Conditions Based on Address Fields*
- *Firewall Filter Match Conditions Based on Address Classes*
- [Statement Hierarchy for Configuring Policers on page 17](#)
- [Two-Color Policer Configuration Overview on page 53](#)
- [Three-Color Policer Configuration Overview on page 149](#)
- [Guidelines for Applying Traffic Policers on page 19](#)
- [physical-interface-filter on page 245](#)
- [physical-interface-policer on page 246](#)



## PART 6

# Configuration Statements and Operational Commands

- [Configuration Statements on page 201](#)
- [Firewall Filter and Policer Operational Mode Commands on page 257](#)



## CHAPTER 18

# Configuration Statements

- [\[edit firewall\] Hierarchy Level on page 202](#)
- [action on page 214](#)
- [bandwidth-limit \(Policer\) on page 215](#)
- [bandwidth-percent on page 217](#)
- [burst-size-limit \(Policer\) on page 219](#)
- [color-aware on page 222](#)
- [color-blind on page 223](#)
- [committed-burst-size on page 224](#)
- [committed-information-rate on page 226](#)
- [excess-burst-size on page 228](#)
- [filter-specific on page 229](#)
- [hierarchical-policer on page 230](#)
- [if-exceeding \(Policer\) on page 231](#)
- [input-hierarchical-policer on page 232](#)
- [input-policer on page 233](#)
- [input-three-color on page 234](#)
- [layer2-policer on page 235](#)
- [load-balance-group on page 236](#)
- [logical-bandwidth-policer on page 236](#)
- [logical-interface-policer on page 237](#)
- [loss-priority \(Firewall Filter Action\) on page 238](#)
- [loss-priority high then discard \(Three-Color Policer\) on page 239](#)
- [output-policer on page 240](#)
- [output-three-color on page 241](#)
- [peak-burst-size on page 242](#)
- [peak-information-rate on page 244](#)
- [physical-interface-filter on page 245](#)
- [physical-interface-policer on page 246](#)

- [policer \(Applying to a Logical Interface\) on page 247](#)
- [policer \(Configuring\) on page 248](#)
- [policer \(Firewall Filter Action\) on page 249](#)
- [prefix-action \(Configuring\) on page 250](#)
- [prefix-action \(Firewall Filter Action\) on page 251](#)
- [single-rate on page 252](#)
- [three-color-policer \(Applying\) on page 253](#)
- [three-color-policer \(Configuring\) on page 254](#)
- [two-rate on page 255](#)

---

## [edit firewall] Hierarchy Level

Several statements in the **[edit firewall]** hierarchy are valid at numerous locations within the hierarchy. .

- [Common Firewall Actions on page 202](#)
- [Common IP Firewall Actions on page 203](#)
- [Common IPv4 and IPv6 Firewall Actions on page 203](#)
- [Common IP Firewall Match Conditions on page 204](#)
- [Common IPv4 Firewall Match Conditions on page 205](#)
- [Common Layer 2 Firewall Match Conditions on page 205](#)
- [Complete \[edit firewall\] Hierarchy on page 207](#)

## Common Firewall Actions

This section lists statements that are valid at the following hierarchy levels, and is referenced at those levels in “[Complete \[edit firewall\] Hierarchy](#)” on [page 207](#) instead of the statements being repeated.

- **[edit firewall family (any | ethernet-switching | inet | inet6) filter *filter-name* term *term-name* then]**
- **[edit firewall filter *filter-name* term *term-name* then]**

The common firewall actions are as follows:

```
count counter-name;
forwarding-class class-name;
loss-priority (high | low | medium-high | medium-low);
next term;
policer policer-name;
three-color-policer policer-name {
 (single-rate single-rate-policer-name | two-rate two-rate-policer-name);
}
```

## Common IP Firewall Actions

This section lists statements that are valid at the following hierarchy levels, and is referenced at those levels in “[Complete \[edit firewall\] Hierarchy](#)” on page 207 instead of the statements being repeated.

- [edit firewall family inet filter *filter-name* term *term-name* then]
- [edit firewall family inet6 filter *filter-name* term *term-name* then]
- [edit firewall filter *filter-name* term *term-name* then]

The common IP firewall actions are as follows:

```
log;
logical-system logical-system-name <routing-instance routing-instance-name>
 <topology topology-name>;
port-mirror;
port-mirror-instance instance-name;
routing-instance routing-instance-name <topology topology-name>;
sample;
service-filter-hit;
syslog;
topology topology-name;
```

## Common IPv4 and IPv6 Firewall Actions

This section lists statements that are valid at the following hierarchy levels, and is referenced at those levels in “[Complete \[edit firewall\] Hierarchy](#)” on page 207 instead of the statements being repeated.

- [edit firewall family inet filter *filter-name* term *term-name* then]
- [edit firewall filter *filter-name* term *term-name* then]

The common IP version 4 (IPv4) and IP version 6 (IPv6) firewall actions are as follows:

```
(accept | discard <accounting collector-name> | reject <administratively-prohibited |
 bad-host-tos | bad-network-tos | fragmentation-needed | host-prohibited |
 host-unknown | host-unreachable | network-prohibited | network-unknown |
 network-unreachable | port-unreachable | precedence-cutoff | precedence-violation |
 protocol-unreachable | source-host-isolated | source-route-failed | tcp-reset>);
ipsec-sa sa-name;
load-balance sa-name;
next-hop-group group-name;
prefix-action action-name;
```

## Common IP Firewall Match Conditions

This section lists statements that are valid at the following hierarchy levels, and is referenced at those levels in “[Complete \[edit firewall\] Hierarchy](#)” on page 207 instead of the statements being repeated.

- **[edit firewall family inet dialer-filter *filter-name* term *term-name* from]** (with the exceptions noted at this level in “[Complete \[edit firewall\] Hierarchy](#)” on page 207)
- **[edit firewall family inet filter *filter-name* term *term-name* from]**
- **[edit firewall family inet6 dialer-filter *filter-name* term *term-name* from]** (with the exceptions noted at this level in “[Complete \[edit firewall\] Hierarchy](#)” on page 207)
- **[edit firewall family inet6 filter *filter-name* term *term-name* from]**
- **[edit firewall filter *filter-name* term *term-name* from]**

The common IP firewall match conditions are as follows:

```

address {
 ip-prefix</prefix-length> <except>;
}
destination-address {
 ip-prefix</prefix-length> <except>;
}
destination-class [class-names] | destination-class-except [class-names];
(destination-port [port-names] | destination-port-except [port-names]);
destination-prefix-list {
 list-name <except>;
}
(forwarding-class [class-names] | forwarding-class-except [class-names]);
 icmp-code [codes] | icmp-code-except [codes];
 icmp-type [types] | icmp-type-except [types];
interface interface-name;
(interface-group [group-names] | interface-group-except [group-names]);
interface-set set-name;
(loss-priority [priorities] | loss-priority-except [priorities]);
(packet-length [values] | packet-length-except [values]);
(port [port-names] | port-except [port-names]);
prefix-list {
 list-name <except>;
}
service-filter-hit;
source-address {
 ip-prefix</prefix-length> <except>;
}
(source-class [class-names] | source-class-except [class-names]);
(source-port [port-names] | source-port-except [port-names]);
source-prefix-list {
 list-name <except>;
}
tcp-established;
tcp-flags flag;
tcp-initial;

```

## Common IPv4 Firewall Match Conditions

This section lists statements that are valid at the following hierarchy levels, and is referenced at those levels in “[Complete \[edit firewall\] Hierarchy](#)” on page 207 instead of the statements being repeated.

- **[edit firewall family inet dialer-filter *filter-name* term *term-name* from]** (with the exceptions noted at this level in “[Complete \[edit firewall\] Hierarchy](#)” on page 207)
- **[edit firewall family inet filter *filter-name* term *term-name* from]**
- **[edit firewall filter *filter-name* term *term-name* from]**

The common IPv4 firewall match conditions are as follows:

```
(ah-spi [values] | ah-spi-except [values]);
(dscp [code-point-values] | dscp-except [code-point-values]);
(esp-spi [values] | esp-spi-except [values]);
first-fragment;
fragment-flags flag;
(fragment-offset [offsets] | fragment-offset-except [offsets]);
(ip-options [option-names] | ip-options-except [option-names]);
is-fragment;
(precedence [precedence-names] | precedence-except [precedence-names]);
(protocol [protocol-names] | protocol-except [protocol-names]);
(ttl [ttl-values] | ttl-except [ttl-values]);
```

## Common Layer 2 Firewall Match Conditions

This section lists statements that are valid at the following hierarchy levels, and is referenced at those levels in “[Complete \[edit firewall\] Hierarchy](#)” on page 207 instead of the statements being repeated.

- **[edit firewall family ethernet-switching filter *filter-name* term *term-name* from]**

The common Layer 2 firewall match conditions are as follows:

```
destination-mac-address {
 mac-address <except>;
}
(destination-port [port-names] | destination-port-except [port-names]);
(dscp [code-point-values] | dscp-except [code-point-values]);
(ether-type [protocol-types] | ether-type-except [protocol-types]);
(forwarding-class [class-names] | forwarding-class-except [class-names]);
 icmp-code [codes] | icmp-code-except [codes]);
 icmp-type [types] | icmp-type-except [types]);
(interface-group [group-names] | interface-group-except [group-names]);
ip-address {
 ip-prefix</prefix-length> <except>;
}
ip-destination-address {
 ip-prefix</prefix-length> <except>;
}
(ip-precedence [precedence-names] | ip-precedence-except [precedence-names]);
(ip-protocol [protocol-names] | ip-protocol-except [protocol-names]);
```

```
ip-source-address ip-prefix </prefix-length>;
(learn-vlan-1p-priority [priorities] | learn-vlan-1p-priority [priorities]);
(learn-vlan-id [vlan-ids] | learn-vlan-id-except [vlan-ids]);
(loss-priority [priorities] | loss-priority-except [priorities]);
(port [port-names] | port-except [port-names]);
source-mac-address {
 mac-address <except>;
}
(source-port [port-names] | source-port-except [port-names]);
tcp-flags flag;
(traffic-type [broadcast known-unicast multicast unknown-unicast] |
 traffic-type-except [broadcast known-unicast multicast unknown-unicast]);
(user-vlan-1p-priority [priorities] | user-vlan-1p-priority [priorities]);
(user-vlan-id [vlan-ids] | user-vlan-id-except [vlan-ids]);
(vlan-ether-type [protocol-types] | vlan-ether-type-except [protocol-types]);
```

## Complete [edit firewall] Hierarchy

```

firewall {
 family (any | ethernet-switching | inet | inet6) {
 ... the family subhierarchies appear after the main [edit firewall] hierarchy ...
 }
 filter filter-name {
 accounting-profile [profile-names];
 enhanced-mode;
 interface-shared-with;
 interface-specific;
 physical-interface-policer;
 term term-name {
 filter filter-name;
 from {
 ... statements in Common IP Firewall Match Conditions on page 204 AND
 ... statements in Common IPv4 Firewall Match Conditions on page 205 ...
 }
 then {
 ... statements in Common Firewall Actions on page 202 AND
 ... statements in Common IP Firewall Actions on page 203 AND
 ... statements in Common IPv4 and IPv6 Firewall Actions on page 203 ...
 }
 }
 }
}
hierarchical-policer policer-name {
 aggregate {
 if-exceeding {
 bandwidth-limit bps;
 burst-size-limit bytes;
 }
 then {
 discard;
 forwarding-class class-name;
 loss-priority (high | low | medium-high | medium-low);
 }
 }
 logical-interface-policer;
 physical-interface-policer;
 premium {
 if-exceeding {
 bandwidth-limit bps;
 burst-size-limit bytes;
 }
 then {
 discard;
 }
 }
}
shared-bandwidth-policer;
interface-set interface-set-name {
 interface-name;
}
load-balance-group group-name {
 next-hop-group [group-names];
}

```

```

}
policer policer-name {
 filter-specific;
 if-exceeding {
 (bandwidth-limit bps | bandwidth-percent percentage);
 burst-size-limit bytes;
 }
 logical-bandwidth-policer;
 logical-interface-policer;
 physical-interface-policer;
 then {
 discard;
 forwarding-class class-name;
 loss-priority (high | low | medium-high | medium-low);
 }
}
three-color-policer policer-name {
 action {
 loss-priority high then discard;
 }
 filter-specific;
 logical-interface-policer;
 physical-interface-policer;
 shared-bandwidth-policer;
 single-rate {
 (color-aware | color-blind);
 committed-burst-size bytes;
 committed-information-rate bps;
 excess-burst-size bytes;
 }
 two-rate {
 (color-aware | color-blind);
 committed-burst-size bytes;
 committed-information-rate bps;
 peak-burst-size bytes;
 peak-information-rate bps;
 }
}
}

firewall {
 family any {
 filter filter-name {
 interface-shared;
 term term-name {
 from {
 (forwarding-class [class-names] | forwarding-class-except [class-names]);
 interface interface-name;
 interface-set set-name;
 (loss-priority [priorities] | loss-priority-except [priorities]);
 (packet-length [values] | packet-length-except [values]);
 }
 then {
 ... statements in Common Firewall Actions on page 202 PLUS ...
 (accept | discard);
 }
 }
 }
 }
}

```

```

 }
 }
}

```

```

firewall {
 family ethernet-switching {
 filter filter-name {
 interface-specific;
 term term-name {
 from {
 destination-address {
 ip-prefix</prefix-length>;
 }
 destination-mac-address {
 mac-address;
 }
 destination-port [port-names];
 destination-prefix-list {
 list-name;
 }
 dot1q-tag [tag-values];
 dot1q-user-priority [priority-values];
 dscp [code-point-values];
 ether-type [protocol-names];
 fragment-flags flag;
 icmp-code [codes];
 icmp-type [types];
 interface interface-name;
 is-fragment;
 precedence [precedence-names];
 protocol [protocol-names];
 source-address {
 ip-prefix</prefix-length>;
 }
 source-mac-address {
 mac-address;
 }
 source-port [port-names];
 source-prefix-list {
 list-name;
 }
 tcp-established;
 tcp-flags flag;
 tcp-initial;
 vlan [vlan-names];
 }
 }
 }
 }
 then {
 (accept | discard);
 analyzer analyzer-name;
 count counter-name;
 forwarding-class class-name;
 interface interface-name;
 log;
 }
}

```

```

 loss-priority (high | low);
 policer policer-name;
 syslog;
 vlan vlan-name;
 }
}
}
}
}

firewall {
 family inet {
 dialer-filter filter-name {
 accounting-profile [profile-names];
 term term-name {
 from {
 ... statements in Common IP Firewall Match Conditions on page 204 AND
 statements in Common IPv4 Firewall Match Conditions on page 205 EXCEPT
 FOR ...
 (ah-spi [values] | ah-spi-except [values]); # NOT valid at this level
 (destination-class [class-names] |
 destination-class-except [class-names]); # NOT valid at this level
 interface interface-name; # NOT valid at this level
 (loss-priority [priorities] | loss-priority-except [priorities]); # NOT valid at
 this level
 service-filter-hit; # NOT valid at this level
 (source-class [class-names] | source-class-except [class-names]); # NOT
 valid at this level
 }
 then {
 (ignore | note);
 log;
 sample;
 syslog;
 }
 }
 }
 }
 filter filter-name {
 accounting-profile [profile-names];
 interface-specific;
 term term-name {
 filter filter-name;
 from {
 ... statements in Common IP Firewall Match Conditions on page 204 AND
 statements in Common IPv4 Firewall Match Conditions on page 205 ...
 }
 then {
 ... statements in Common Firewall Actions on page 202 AND
 statements in Common IP Firewall Actions on page 203 AND
 statements in Common IPv4 and IPv6 Firewall Actions on page 203 ...
 }
 }
 }
 prefix-action name {
 count;
 destination-prefix-length prefix-length;
 }
}

```

```

filter-specific;
policer policer-name;
source-prefix-length prefix-length;
subnet-prefix-length prefix-length;
}
service-filter filter-name {
 term term-name {
 from {
 address {
 ip-prefix</prefix-length>;
 }
 (ah-spi [values] | ah-spi-except [values]);
 destination-address {
 ip-prefix</prefix-length>;
 }
 (destination-port [port-names] | destination-port-except [port-names]);
 destination-prefix-list {
 list-name;
 }
 (esp-spi [values] | esp-spi-except [values]);
 first-fragment;
 fragment-flags flag;
 (fragment-offset [offsets] | fragment-offset-except [offsets]);
 (interface-group [group-names] | interface-group-except [group-names]);
 (ip-options [option-names] | ip-options-except [option-names]);
 is-fragment;
 (loss-priority [priorities] | loss-priority-except [priorities]);
 (port [port-names] | port-except [port-names]);
 prefix-list {
 list-name;
 }
 (protocol [protocol-names] | protocol-except [protocol-names]);
 source-address {
 ip-prefix</prefix-length>;
 }
 (source-port [port-names] | source-port-except [port-names]);
 source-prefix-list {
 list-name;
 }
 tcp-flags flag-name;
 }
 then {
 count counter-name;
 log;
 port-mirror;
 sample;
 (service | skip);
 }
 }
}
simple-filter filter-name {
 term term-name {
 from {
 destination-address ip-prefix</prefix-length>;
 destination-port port-name;
 forwarding-class [class-names];
 }
 }
}

```

```

 protocol protocol-name;
 source-address ip-prefix</prefix-length>;
 source-port port-name;
 }
 then {
 forwarding-class class-name;
 loss-priority (high | low | medium-high | medium-low);
 policer policer-name;
 }
}
}
}
}

firewall {
 family inet6 {
 dialer-filter filter-name {
 accounting-profile [profile-names];
 term term-name {
 from {
 ... statements in Common IP Firewall Match Conditions on page 204 PLUS ...
 (next-header [protocol-types] | next-header-except [protocol-types]);
 ... BUT NOT ...
 (destination-class [class-names] |
 destination-class-except [class-names]); # NOT valid at this level
 (forwarding-class [class-names] |
 forwarding-class-except [class-names]); # NOT valid at this level
 interface interface-name; # NOT valid at this level
 (interface-group [group-names] | interface-group-except [group-names]); #
 NOT valid at this level
 (loss-priority [priorities] | loss-priority-except [priorities]); # NOT valid at
 this level
 service-filter-hit; # NOT valid at this level
 (source-class [class-names] | source-class-except [class-names]); # NOT
 valid at this level
 tcp-established; # NOT valid at this level
 tcp-flags flag; # NOT valid at this level
 tcp-initial; # NOT valid at this level
 }
 then {
 (ignore | note);
 log;
 sample;
 syslog;
 }
 }
 }
 }
 filter filter-name {
 accounting-profile [profile-names];
 interface-specific;
 term term-name {
 filter filter-name;
 from {
 ... statements in Common IP Firewall Match Conditions on page 204 PLUS ...
 (next-header [protocol-types] | next-header-except [protocol-types]);
 (traffic-class [code-point-values] | traffic-class-except [code-point-values]);
 }
 }
 }
}

```

```

 }
 then {
 ... statements in Common Firewall Actions on page 202 AND
 statements in Common IP Firewall Actions on page 203 PLUS ...
 (accept | discard | reject <address-unreachable | administratively-prohibited |
 beyond-scope | fragmentation-needed | no-route | port-unreachable |
 tcp-reset>);
 }
}
}
service-filter filter-name {
 term term-name {
 from {
 address {
 ip-prefix </prefix-length>;
 }
 (ah-spi [values] | ah-spi-except [values]);
 destination-address {
 ip-prefix </prefix-length>;
 }
 (destination-port [port-names] | destination-port-except [port-names]);
 destination-prefix-list {
 list-name;
 }
 (esp-spi [values] | esp-spi-except [values]);
 (interface-group [group-names] | interface-group-except [group-names]);
 (next-header [protocol-types] | next-header-except [protocol-types]);
 (port [port-names] | port-except [port-names]);
 prefix-list {
 list-name;
 }
 source-address {
 ip-prefix </prefix-length>;
 }
 (source-port [port-names] | source-port-except [port-names]);
 source-prefix-list {
 list-name;
 }
 tcp-flags flag-name;
 }
 then {
 count counter-name;
 log;
 port-mirror;
 sample;
 (service | skip);
 }
 }
}
}
}

```

- Related Documentation**
- [Notational Conventions Used in Junos OS Configuration Hierarchies](#)

## action

---

|                            |                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre>action {   loss-priority high then discard; }</pre>                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>     | <p>[edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i>],<br/>         [edit firewall <b>three-color-policer</b> <i>name</i>],<br/>         [edit logical-systems <i>logical-system-name</i> firewall <b>three-color-policer</b> <i>name</i>]</p>                                                                    |
| <b>Release Information</b> | <p>Statement introduced in Junos OS Release 8.2.<br/>         Logical systems support introduced in Junos OS Release 9.3.<br/>         Support at the [edit dynamic-profiles ... <b>three-color-policer</b>] hierarchy level introduced in Junos OS Release 11.4.<br/>         Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> |
| <b>Description</b>         | Discard traffic on a logical interface using tricolor marking policing.                                                                                                                                                                                                                                                                                    |




**NOTE:** This statement is supported only on IQ2 interfaces.

The remaining statement is explained separately.

- |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Three-Color Policer Configuration Overview on page 149</a></li> <li>• <a href="#">Basic Single-Rate Three-Color Policers on page 157</a></li> <li>• <a href="#">Basic Two-Rate Three-Color Policers on page 165</a></li> <li>• <a href="#">Two-Color and Three-Color Logical Interface Policers on page 175</a></li> <li>• <a href="#">Two-Color and Three-Color Physical Interface Policers on page 189</a></li> <li>• <a href="#">Two-Color and Three-Color Policers at Layer 2 on page 43</a></li> <li>• <a href="#">loss-priority high then discard on page 239</a></li> </ul> |

## bandwidth-limit (Policer)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>bandwidth-limit <i>bps</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>     | [edit dynamic-profiles <i>profile-name</i> firewall <b>policer</b> <i>policer-name</i> <b>if-exceeding</b> ],<br>[edit firewall <b>policer</b> <i>policer-name</i> <b>if-exceeding</b> ],<br>[edit logical-systems <i>logical-system-name</i> <b>policer</b> <i>policer-name</i> <b>if-exceeding</b> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Release Information</b> | Statement introduced before Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>if-exceeding</b> ] hierarchy level introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>         | <p>For a single-rate two-color policer, configure the bandwidth limit as a number of bits per second. Single-rate two-color policing uses the single token bucket algorithm to measure traffic-flow conformance to a two-color policer rate limit.</p> <p>Traffic at the interface that conforms to the bandwidth limit is categorized green. Traffic that exceeds the specified rate is also categorized as green provided that sufficient tokens remain in the single token bucket. Packets in a green flow are implicitly marked with <b>low</b> packet loss priority (PLP) and then passed through the interface.</p> <p>Traffic that exceeds the specified rate when insufficient tokens remain in the single token bucket is categorized red. Depending on the configuration of the two-color policer, packets in a red traffic flow might be implicitly discarded; or the packets might be re-marked with a specified forwarding class, a specified PLP, or both, and then passed through the interface.</p> |
|                            | <p> <b>NOTE:</b> This statement specifies the bandwidth limit as an absolute number of bits per second. Alternatively, for single-rate two-color policers only, you can use the <b>bandwidth-percent</b> <i>percentage</i> statement to specify the bandwidth limit as a percentage of either the physical interface port speed or the configured logical interface shaping rate.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                            | <p>Single-rate two-color policing allows bursts of traffic for short periods, whereas single-rate and two-rate three-color policing allows more sustained bursts of traffic.</p> <p>Hierarchical policing is a form of two-color policing that applies different policing actions based on whether the packets are classified for expedited forwarding (EF) or for a lower priority. You apply a hierarchical policer to ingress Layer 2 traffic to allow bursts of EF traffic for short period and bursts of non-EF traffic for short periods, with EF traffic always taking precedence over non-EF traffic.</p>                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>             | <b>bps</b> —You can specify the number of bits per second either as a decimal number or as a decimal number followed by the abbreviation <b>k</b> (1000), <b>m</b> (1,000,000), or <b>g</b> (1,000,000,000).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                            | <b>Range:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

- (M Series and T Series routers) 8000 through 100,000,000,000
- (Mx Series routers) 8000 through 18,446,744,073,709,551,615



**NOTE:** When you specify a numeric value beyond the supported bandwidth of the PFE, the router caps the bandwidth at the maximum supported bandwidth of the PFE.

---

**Default:** None.

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

- Related Documentation**
- [Two-Color Policer Configuration Overview on page 53](#)
  - [Policer Bandwidth and Burst-Size Limits](#)
  - [Policer Color-Marking and Actions on page 22](#)
  - [Single Token Bucket Algorithm on page 24](#)
  - [Determining Proper Burst Size for Traffic Policers on page 34](#)
  - [bandwidth-percent on page 217](#)
  - [burst-size-limit \(Policer\) on page 219](#)

## bandwidth-percent

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>bandwidth-percent <i>percentage</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>     | [edit dynamic-profiles <i>profile-name</i> firewall <b>policer</b> <i>policer-name</i> <b>if-exceeding</b> ],<br>[edit firewall <b>policer</b> <i>policer-name</i> <b>if-exceeding</b> ],<br>[edit logical-systems <i>logical-system-name</i> <b>policer</b> <i>policer-name</i> <b>if-exceeding</b> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b> | Statement introduced before Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>if-exceeding</b> ] hierarchy level introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>         | For a single-rate two-color policer, configure the bandwidth limit as a percentage value. Single-rate two-color policing uses the <i>single token bucket algorithm</i> to measure traffic-flow conformance to a two-color policer rate limit.<br><br>Traffic at the interface that conforms to the bandwidth limit is categorized green. Traffic that exceeds the specified rate is also categorized as green provided that sufficient tokens remain in the single token bucket. Packets in a green flow are implicitly marked with <b>low</b> packet loss priority and then passed through the interface.<br><br>Traffic that exceeds the specified rate when insufficient tokens remain in the single token bucket is categorized red. Depending on the configuration of the two-color policer, packets in a red traffic flow might be implicitly discarded; or the packets might be re-marked with a specified forwarding class, a specified PLP, or both, and then passed through the interface. |



**NOTE:** This statement specifies the bandwidth limit as a percentage of either the physical interface port speed or the configured logical interface shaping rate. Alternatively, you can use the `bandwidth-limit bps` statement to specify the bandwidth limit as an absolute number of bits per second.

The function of the bandwidth limit is extended by the burst size (configured using the `burst-size-limit bytes` statement) to allow bursts of traffic up to a limit based on the overall traffic load:

- When a single-rate two-color policer is applied to the input or output traffic at an interface, the initial capacity for traffic bursting is equal to the number of bytes specified by this statement.
- During periods of relatively low traffic (traffic that arrives at or departs from the interface at overall rates below the token arrival rate), unused tokens accumulate in the bucket, but only up to the configured token bucket depth.

Single-rate two-color policing allows bursts of traffic for short periods, whereas single-rate and two-rate three-color policing allows more sustained bursts of traffic.

Hierarchical policing is a form of two-color policing that applies different policing actions based on whether the packets are classified for expedited forwarding (EF) or for a lower priority. You apply a hierarchical policer to ingress Layer 2 traffic to allow bursts of EF traffic for short periods and bursts of non-EF traffic for short periods, with EF traffic always taking precedence over non-EF traffic.

**Options**    **percentage**—Traffic rate as a percentage of either the physical interface media rate or the logical interface configured shaping rate. You can configure a shaping rate on a logical interface by using class-of-service statement.



**NOTE:** You cannot rate-limit based on bandwidth percentage for tunnel or software interfaces. The bandwidth percentage policer also cannot be used for forwarding table filters. Bandwidth percentage policers can only be used for interface-specific filters. Bandwidth percentage policers applied on an aggregated Ethernet bundle or an aggregated SONET bundle *do* match the effective bandwidth and burst-size to user-configured values by default and do not require shared-bandwidth-policer configuration.

**Range:** 0 through 100

**Default:** None.

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

- Related Documentation**
- [Two-Color Policer Configuration Overview on page 53](#)
  - [Policer Bandwidth and Burst-Size Limits](#)
  - [Policer Color-Marking and Actions on page 22](#)
  - [Single Token Bucket Algorithm on page 24](#)
  - [Determining Proper Burst Size for Traffic Policers on page 34](#)
  - [Bandwidth Policers on page 79](#)
  - [bandwidth-limit \(Policer\) on page 215](#)
  - [burst-size-limit \(Policer\) on page 219](#)

## burst-size-limit (Policer)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>burst-size-limit bytes;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>     | <p>[edit dynamic-profiles <i>profile-name</i> firewall <b>policer</b> <i>policer-name</i> <b>if-exceeding</b>],</p> <p>[edit firewall <b>policer</b> <i>policer-name</i> <b>if-exceeding</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> <b>policer</b> <i>policer-name</i> <b>if-exceeding</b>]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Support at the [edit dynamic-profiles ... <b>if-exceeding</b>] hierarchy level introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>         | <p>For a single-rate two-color policer, configure the burst size as a number of bytes. The burst size allows for short periods of traffic bursting (back-to-back traffic at average rates that exceed the configured bandwidth limit). Single-rate two-color policing uses the <i>single token bucket algorithm</i> to measure traffic-flow conformance to a two-color policer rate limit.</p> <p>Traffic at the interface that conforms to the bandwidth limit is categorized green. Traffic that exceeds the specified rate is also categorized as green provided that sufficient tokens remain in the single token bucket. Packets in a green flow are implicitly marked with <b>low</b> packet loss priority and then passed through the interface.</p> <p>Traffic that exceeds the specified rate when insufficient tokens remain in the single token bucket is categorized red. Depending on the configuration of the two-color policer, packets in a red traffic flow might be implicitly discarded; or the packets might be re-marked with a specified forwarding class, a specified PLP, or both, and then passed through the interface.</p> <p>The burst size extends the function of the bandwidth limit (configured using either the <b>bandwidth-limit <i>bps</i></b> statement or the <b>bandwidth-percent <i>percentage</i></b> statement) to allow bursts of traffic up to a limit based on the overall traffic load:</p> <ul style="list-style-type: none"> <li>• When a single-rate two-color policer is applied to the input or output traffic at an interface, the initial capacity for traffic bursting is equal to the number of bytes specified by this statement.</li> <li>• During periods of relatively low traffic (traffic that arrives at or departs from the interface at overall rates below the token arrival rate), unused tokens accumulate in the bucket, but only up to the configured token bucket depth.</li> </ul> <p>Single-rate two-color policing allows bursts of traffic for short periods, whereas single-rate and two-rate three-color policing allows more sustained bursts of traffic.</p> <p>Hierarchical policing is a form of two-color policing that applies different policing actions based on whether the packets are classified for expedited forwarding (EF) or for a lower priority. You apply a hierarchical policer to ingress Layer 2 traffic to allow bursts of EF traffic for short period and bursts of non-EF traffic for short periods, with EF traffic always taking precedence over non-EF traffic.</p> |

Table 12 on page 220 summarizes the relationship between the **bandwidth-limit** and the token arrival rate. This information is useful in calculating the minimum **burst-size-limit**.

**Table 12: Bandwidth Limits and Token Rates**

| Bandwidth Limit     | Token Rate         |
|---------------------|--------------------|
| 0-333 Mbps          | low (262 $\mu$ s)  |
| 334-666 Mbps        | high (8.2 $\mu$ s) |
| 667-1333 Mbps       | low                |
| 1334 Mbps and above | high               |

The burst-size limit enforced is based on the burst-size limit you configure. For a rate-limited logical interface, the Packet Forwarding Engine calculates the optimum burst-size-limit values and then applies the value closest to the burst-size-limit value specified in the policer configuration.

On MX Series routers and EX Series switches, the burst-size limit is not as freely configurable as it is on other platforms. Junos OS does not support an unlimited combination of policer bandwidth and burst-size limits on MX Series routers and EX Series switches. For a single-rate two-color policer on an MX Series router and on an EX Series switch, the minimum supported burst-size limit is equivalent to the amount of traffic allowed by the policer bandwidth limit in a time span of 1 millisecond. For example, for a policer configured with a **bandwidth-limit** value of 1 Gbps, the minimum supported value for **burst-size-limit** on an MX Series router is 125 KB. If you configure a value that is smaller than the minimum, Junos OS overrides the configuration and applies the actual minimum.

**Options** *bytes*—Burst-size limit in bytes. The minimum recommended value is the maximum transmission unit (MTU) of the IP packets being policed. You can specify the value either as a complete decimal number or as a decimal number followed by the abbreviation **k** (1000), **m** (1,000,000), or **g** (1,000,000,000).


**Range:** 1500 through 100,000,000,000

**Default:** None


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

- Related Documentation**
- [Two-Color Policer Configuration Overview on page 53](#)
  - [Policer Bandwidth and Burst-Size Limits](#)
  - [Policer Color-Marking and Actions on page 22](#)
  - [Single Token Bucket Algorithm on page 24](#)
  - [Determining Proper Burst Size for Traffic Policers on page 34](#)
  - [bandwidth-limit \(Policer\) on page 215](#)
  - [bandwidth-percent on page 217](#)

## color-aware

|                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                             | color-aware;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Hierarchy Level</b>                                                                                                                                                    | [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>single-rate</b> ],<br>[edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>two-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>single-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>two-rate</b> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Release Information</b>                                                                                                                                                | Statement introduced in Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>single-rate</b> ] and [edit dynamic-profiles ... <b>two-rate</b> ] hierarchy levels introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>                                                                                                                                                        | <p>For a three-color policer, configure the way preclassified packets are metered. In color-aware mode, the local router can assign a higher packet loss priority, but cannot assign a lower packet loss priority.</p> <p>For example, suppose an upstream router assigned medium-high packet loss priority to a packet because the packet exceeded the committed information rate on the upstream router interface.</p> <ul style="list-style-type: none"> <li>• If the local router applies color-aware policing to the packet, the router <i>cannot</i> change the packet loss priority to low, even if the packet conforms to the configured committed information route on the local router interface.</li> <li>• If the local router applies color-blind policing to the packet, the router <i>can</i> change the packet loss priority to low if the packet conforms to the configured committed information route on the local router interface.</li> </ul> |
| <div>  <b>NOTE:</b> A color-aware policer cannot be applied to Layer 2 traffic. </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default</b>                                                                                                                                                            | If you omit the <b>color-aware</b> statement, the default behavior is color-aware mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Required Privilege Level</b>                                                                                                                                           | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b>                                                                                                                                              | <ul style="list-style-type: none"> <li>• <a href="#">Three-Color Policer Configuration Overview on page 149</a></li> <li>• <a href="#">Color Modes for Three-Color Policers on page 154</a></li> <li>• <a href="#">color-blind on page 223</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## color-blind

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | color-blind;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>single-rate</b> ],<br>[edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>two-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>single-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>two-rate</b> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>single-rate</b> ] and [edit dynamic-profiles ... <b>two-rate</b> ] hierarchy levels introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | <p>For a three-color policer, configure the way preclassified packets are metered. In color-blind mode, the local router ignores the preclassification of packets and can assign a higher or lower packet loss priority.</p> <p>For example, suppose an upstream router assigned medium-high packet loss priority to a packet because the packet exceeded the committed information rate on the upstream router interface.</p> <ul style="list-style-type: none"> <li>• If the local router applies color-aware policing to the packet, the router <i>cannot</i> change the packet loss priority to low, even if the packet conforms to the configured committed information route on the local router interface.</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p> <b>NOTE:</b> A color-aware policer cannot be applied to Layer 2 traffic.</p> </div> <ul style="list-style-type: none"> <li>• If the local router applies color-blind policing to the packet, the router <i>can</i> change the packet loss priority to low if the packet conforms to the configured committed information route on the local router interface.</li> </ul> |
| <b>Default</b>                  | If you omit the <b>color-blind</b> statement, the default behavior is color-aware mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Three-Color Policer Configuration Overview on page 149</a></li> <li>• <a href="#">Color Modes for Three-Color Policers on page 154</a></li> <li>• <a href="#">color-aware on page 222</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## committed-burst-size

|                            |                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>committed-burst-size bytes;</code>                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>     | [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>single-rate</b> ],<br>[edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>two-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>single-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>two-rate</b> ] |
| <b>Release Information</b> | Statement introduced in Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>single-rate</b> ] and [edit dynamic-profiles ... <b>two-rate</b> ] hierarchy levels introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                           |
| <b>Description</b>         | For a three-color policer, configure the committed burst size (CBS) as a number of bytes.                                                                                                                                                                                                                                                                                                                   |



**NOTE:** When you include the **committed-burst-size** statement in the configuration, you must also include the **committed-information-rate** statement at the same hierarchy level.

In three-color policing, a committed information rate (CIR) defines the guaranteed bandwidth for traffic arriving at or departing from the interface under normal line conditions. A flow of traffic at an average rate that conforms to the CIR is categorized green.

During periods of average traffic rates below the CIR, any unused bandwidth capacity accumulates up to a maximum amount defined by the CBS. Short periods of bursting traffic (back-to-back traffic at averages rates that exceed the CIR) are also categorized as green provided that unused bandwidth capacity is available.

Traffic that exceeds both the CIR and the CBS is considered nonconforming.

Single-rate three-color policers use a *dual token bucket algorithm* to measure traffic against a single rate limit. Nonconforming traffic is categorized as yellow or red, based on the **excess-burst-size** statement included in the policer configuration.

Two-rate three-color policers use a *dual-rate dual token bucket algorithm* to measure traffic against two rate limits. Nonconforming traffic is categorized as yellow or red based on the **peak-information-rate** and **peak-burst-rate** statements included in the policer configuration.

**Options** **bytes**—Number of bytes. You can specify a value in bytes either as a complete decimal number or as a decimal number followed by the abbreviation **k** (1000), **m** (1,000,000), or **g** (1,000,000,000).  
**Range:** 1500 through 100,000,000,000 bytes

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Three-Color Policer Configuration Overview on page 149</a></li><li>• <a href="#">Policer Bandwidth and Burst-Size Limits</a></li><li>• <a href="#">Policer Color-Marking and Actions on page 22</a></li><li>• <a href="#">Dual Token Bucket Algorithms on page 26</a></li><li>• <a href="#">Determining Proper Burst Size for Traffic Policers on page 34</a></li><li>• <a href="#">committed-information-rate on page 226</a></li><li>• <a href="#">excess-burst-size on page 228</a></li><li>• <a href="#">peak-burst-size on page 242</a></li><li>• <a href="#">peak-information-rate on page 244</a></li></ul> |

## committed-information-rate

|                            |                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>committed-information-rate <i>bps</i>;</code>                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>     | [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>single-rate</b> ],<br>[edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>two-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>single-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>two-rate</b> ] |
| <b>Release Information</b> | Statement introduced in Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>single-rate</b> ] and [edit dynamic-profiles ... <b>two-rate</b> ] hierarchy levels introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                           |
| <b>Description</b>         | For a three-color policer, configure the committed information rate as a number of bits per second. The committed information rate (CIR) is the guaranteed bandwidth for traffic arriving at or departing from the interface under normal line conditions.                                                                                                                                                  |



**NOTE:** When you include the **committed-information-rate** statement in the configuration, you must also include the **committed-burst-size** statement at the same hierarchy level.

In three-color policing, a CIR defines the guaranteed bandwidth for traffic arriving at or departing from the interface under normal line conditions. A flow of traffic at an average rate that conforms to the CIR is categorized green.

During periods of average traffic rates below the CIR, any unused bandwidth capacity accumulates up to a maximum amount defined by the committed burst size (CBS). Short periods of bursting traffic (back-to-back traffic at averages rates that exceed the CIR) are also categorized as green provided that unused bandwidth capacity is available.

Traffic that exceeds both the CIR and the CBS is considered nonconforming.

Single-rate three-color policers use a *dual token bucket algorithm* to measure traffic against a single rate limit. Nonconforming traffic is categorized as yellow or red, based on the **excess-burst-size** statement included in the policer configuration.

Two-rate three-color policers use a *dual-rate dual token bucket algorithm* to measure traffic against two rate limits. Nonconforming traffic is categorized as yellow or red based on the **peak-information-rate** and **peak-burst-rate** statements included in the policer configuration.

**Options** **bps**—Number of bits per second. You can specify a value in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation **k** (1000), **m** (1,000,000), or **g** (1,000,000,000).

**Range:**

- 1500 through 100,000,000,000 bps on EX, M, and T Series routers


- 1500 through 18,446,744,073,709,551,615 bps on Mx Series routers

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

**Related Documentation**

- [Three-Color Policer Configuration Overview on page 149](#)
- *Policer Bandwidth and Burst-Size Limits*
- [Policer Color-Marking and Actions on page 22](#)
- [Dual Token Bucket Algorithms on page 26](#)
- [Determining Proper Burst Size for Traffic Policers on page 34](#)
- [committed-burst-size on page 224](#)
- [excess-burst-size on page 228](#)
- [peak-burst-size on page 242](#)
- [peak-information-rate on page 244](#)

## excess-burst-size

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <code>excess-burst-size bytes;</code>                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>single-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>single-rate</b> ]                                                                          |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Statement introduced in Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>single-rate</b> ] hierarchy level introduced in Junos Release OS 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                 |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | For a single-rate three-color policer, configure the excess burst size (EBS) as a number of bytes. The EBS allows for moderate periods of bursting traffic that exceeds both the committed information rate (CIR) and the committed burst size (CBS).                           |
| <div>  <p><b>NOTE:</b> When you include the <b>excess-burst-size</b> statement in the configuration, you must also include the <b>committed-burst-size</b> and <b>committed-information-rate</b> statements at the same hierarchy level.</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                 |
| <p>Traffic that exceeds both the CIR and the CBS is considered nonconforming.</p> <p>Single-rate three-color policing uses a <i>dual token bucket algorithm</i> to measure traffic against a single rate limit. Nonconforming traffic is categorized as yellow or red based on the <b>excess-burst-size</b> statement included in the policer configuration.</p> <p>During periods of traffic that conforms to the CIR, any unused portion of the guaranteed bandwidth capacity accumulates in the first token bucket, up to the maximum number of bytes defined by the CBS. If any accumulated bandwidth capacity overflows the first bucket, the excess accumulates in a second token bucket, up to the maximum number of bytes defined by the EBS.</p> <p>A nonconforming traffic flow is categorized yellow if its size conforms to bandwidth capacity accumulated in the first token bucket. Packets in a yellow flow are marked with <b>medium-high</b> packet loss priority (PLP) and then passed through the interface.</p> <p>A nonconforming traffic flow is categorized red if its size exceeds the bandwidth capacity accumulated in the second token bucket. Packets in a red traffic flow are marked with <b>high</b> PLP and then either passed through the interface or optionally discarded.</p> |                                                                                                                                                                                                                                                                                 |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>bytes</b> —Number of bytes. You can specify a value in bytes either as a complete decimal number or as a decimal number followed by the abbreviation <b>k</b> (1000), <b>m</b> (1,000,000), or <b>g</b> (1,000,000,000).<br><b>Range:</b> 1500 through 100,000,000,000 bytes |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>firewall</b> —To view this statement in the configuration.<br><b>firewall-control</b> —To add this statement to the configuration.                                                                                                                                           |

- Related Documentation**
- [Three-Color Policer Configuration Overview on page 149](#)
  - [Policer Bandwidth and Burst-Size Limits](#)
  - [Policer Color-Marking and Actions on page 22](#)
  - [Dual Token Bucket Algorithms on page 26](#)
  - [Determining Proper Burst Size for Traffic Policers on page 34](#)
  - [committed-burst-size on page 224](#)
  - [committed-information-rate on page 226](#)

## filter-specific

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | filter-specific;                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> firewall <b>policer</b> <i>policer-name</i> ],<br>[edit firewall family inet <b>prefix-action</b> <i>name</i> ],<br>[edit firewall <b>policer</b> <i>policer-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> firewall <b>policer</b> <i>policer-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> firewall family inet <b>prefix-action</b> <i>name</i> ]            |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Logical systems support introduced in Junos OS Release 9.3.<br>Support at the [edit dynamic-profiles ... <b>policer</b> <i>policer-name</i> ] hierarchy level introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                            |
| <b>Description</b>              | Set the prefix-specific action or policer to operate in <i>filter-specific</i> mode, meaning that a single policer and counter are shared by all filter terms that reference the prefix-specific action or policer. By default, the prefix-specific action or policer operates in <i>term-specific</i> mode, meaning that a separate policer and counter are used for each filter term that references the prefix-specific action or policer. |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Filter-Specific Policer Overview on page 89</a></li> <li>• <a href="#">Prefix-Specific Counting and Policing Overview on page 101</a></li> <li>• <a href="#">Filter-Specific Counter and Policer Set Overview on page 104</a></li> </ul>                                                                                                                                                 |

## hierarchical-policer

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> hierarchical-policer <i>hierarchical-policer-name</i>   <i>uid</i> {   aggregate {     if-exceeding {       bandwidth-limit <i>bps</i>;       burst-size-limit <i>bytes</i>;     }     then {       discard;     }   }   premium {     if-exceeding {       bandwidth-limit <i>bps</i>;       burst-size-limit <i>bytes</i>;     }     then {       discard;     }   } } </pre>                                                                                               |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> firewall],<br>[edit firewall]                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.5.<br>Support at the [edit dynamic-profiles ... firewall] hierarchy level introduced in Junos OS Release 11.4.                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>              | Specify a hierarchical policer on Enhanced Intelligent Queuing (IQE) PICs and SONET interfaces hosted on M120 and M320 edge routers with incoming Flexible PIC Concentrators (FPCs) as SFPC and outgoing FPCs as FFPC; on MPCs hosted on MX Series routers; on T320, T640, and T1600 core routers with Enhanced Intelligent Queuing (IQE) PICs; and on T4000 routers with Type 5 FPC and Enhanced Scaling Type 4 FPC.                                                               |
| <b>Options</b>                  | <p><b><i>hierarchical-policer-name</i></b>—Name that identifies the policer. The name can contain letters, numbers, and hyphens (-), and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (" ").</p> <p><b><i>uid</i></b>—When you configure a hierarchical policer at the [edit dynamic-profiles] hierarchy level, you must assign a variable UID as the policer name.</p> <p>The remaining statements are explained separately.</p> |
| <b>Required Privilege Level</b> | <p>firewall—To view this statement in the configuration.</p> <p>firewall-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><i>Hierarchical Policer Configuration Overview</i></li> <li><i>Hierarchical Policers</i></li> </ul>                                                                                                                                                                                                                                                                                                                                          |

- *aggregate* (*Hierarchical Policer*)
- *bandwidth-limit* (*Hierarchical Policer*)
- *burst-size-limit* (*Hierarchical Policer*)
- *if-exceeding* (*Hierarchical Policer*)
- *premium* (*Hierarchical Policer*)

## if-exceeding (Policer)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>if-exceeding {   (bandwidth-limit <i>bps</i>   bandwidth-percent <i>number</i>);   burst-size-limit <i>bytes</i>; }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> firewall <b>policer</b> <i>policer-name</i> ],<br>[edit firewall <b>policer</b> <i>policer-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> firewall <b>policer</b> <i>policer-name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Logical systems support introduced in Junos OS Release 9.3.<br>Support at the [edit dynamic-profiles ... <b>policer</b> <i>policer-name</i> ] hierarchy level introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>              | Configure rate limits for a single-rate two-color policer.<br><br>The remaining statements are explained separately.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Two-Color Policer Configuration Overview on page 53</a></li> <li>• <a href="#">Hierarchical Policer Configuration Overview</a></li> <li>• <a href="#">Basic Single-Rate Two-Color Policers on page 59</a></li> <li>• <a href="#">Bandwidth Policers on page 79</a></li> <li>• <a href="#">Filter-Specific Counters and Policers on page 89</a></li> <li>• <a href="#">Prefix-Specific Counting and Policing Actions on page 101</a></li> <li>• <a href="#">Multifield Classification on page 119</a></li> <li>• <a href="#">Policer Overhead to Account for Rate Shaping in the Traffic Manager on page 139</a></li> <li>• <a href="#">Hierarchical Policers</a></li> </ul> |

## input-hierarchical-policer

---

|                                 |                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>input-hierarchical-policer <i>policer-name</i>;</code>                                                                                       |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> layer2-policer],<br>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> layer2-policer], |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.5.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                           |
| <b>Description</b>              | Apply a hierarchical policer to the Layer 2 input traffic for all protocol families at the physical or logical interface.                          |
| <b>Options</b>                  | <i>policer-name</i> —Name of the hierarchical policer.                                                                                             |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Hierarchical Policers</i></li><li>• <i>layer2-policer (Hierarchical Policer)</i></li></ul>              |

## input-policer

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>input-policer <i>policer-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | <code>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <a href="#">layer2-policer</a>]</code><br><code>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <a href="#">layer2-policer</a>]</code>                                                                                                                                                                                                                                                                            |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | Apply a single-rate two-color policer to the Layer 2 input traffic at the logical interface. The <b>input-policer</b> and <b>input-three-color</b> statements are mutually exclusive.                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Options</b>                  | <b><i>policer-name</i></b> —Name of the single-rate two-color policer that you define at the <code>[edit firewall]</code> hierarchy level.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Two-Color and Three-Color Policers at Layer 2 on page 43</a></li> <li>• <i>Applying Layer 2 Policers to Gigabit Ethernet Interfaces</i></li> <li>• <i>Configuring a Gigabit Ethernet Policer</i></li> <li>• <a href="#">input-three-color on page 234</a></li> <li>• <a href="#">layer2-policer on page 235</a></li> <li>• <a href="#">logical-interface-policer on page 237</a></li> <li>• <a href="#">output-policer on page 240</a></li> <li>• <a href="#">output-three-color on page 241</a></li> </ul> |

## input-three-color

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>input-three-color <i>policer-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <a href="#">layer2-policer</a> ]<br>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <a href="#">layer2-policer</a> ]                                                                                                                                                                                                                                                                                                         |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | Apply a single-rate or two-rate three-color policer to the Layer 2 input traffic at the logical interface. The <b>input-three-color</b> and <b>input-policer</b> statements are mutually exclusive.                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>                  | <b><i>policer-name</i></b> —Name of the single-rate or two-rate three-color policer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Two-Color and Three-Color Policers at Layer 2 on page 43</a></li><li>• <a href="#">Applying Layer 2 Policers to Gigabit Ethernet Interfaces</a></li><li>• <a href="#">Configuring a Gigabit Ethernet Policer</a></li><li>• <a href="#">input-policer on page 233</a></li><li>• <a href="#">layer2-policer on page 235</a></li><li>• <a href="#">logical-interface-policer on page 237</a></li><li>• <a href="#">output-policer on page 240</a></li><li>• <a href="#">output-three-color on page 241</a></li></ul> |

## layer2-policer

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> layer2-policer {     input-policer <i>policer-name</i>;     input-three-color <i>policer-name</i>;     output-policer <i>policer-name</i>;     output-three-color <i>policer-name</i>; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.2.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b>              | <p>For 1-Gigabit Ethernet and 10-Gigabit Ethernet IQ2 and IQ2-E interfaces on M Series, MX Series, and T Series routers, and for aggregated Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet interfaces on EX Series switches, apply Layer 2 logical interface policers. The following policers are supported:</p> <ul style="list-style-type: none"> <li>• Two-color</li> <li>• Single-rate tricolor marking (srTCM)</li> <li>• Two-rate tricolor marking (trTCM)</li> </ul> <p>Two-color and tricolor policers are configured at the <b>[edit firewall]</b> hierarchy level.</p>                                                                                                                                                                                           |
| <b>Options</b>                  | <p><b>input-policer <i>policer-name</i></b>—Two-color input policer to associate with the interface. This statement is mutually exclusive with the <b>input-three-color</b> statement.</p> <p><b>input-three-color <i>policer-name</i></b>—Tricolor input policer to associate with the interface. This statement is mutually exclusive with the <b>input-policer</b> statement.</p> <p><b>output-policer <i>policer-name</i></b>—Two-color output policer to associate with the interface. This statement is mutually exclusive with the <b>output-three-color</b> statement.</p> <p><b>output-three-color <i>policer-name</i></b>—Tricolor output policer to associate with the interface. This statement is mutually exclusive with the <b>output-policer</b> statement.</p> |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Applying Layer 2 Policers to Gigabit Ethernet Interfaces</i></li> <li>• <i>Configuring Gigabit Ethernet Two-Color and Tricolor Policers</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## load-balance-group

---

|                                 |                                                                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>load-balance-group group-name {<br/>    next-hop-group [ group-names ];<br/>}</code>                                                                                                 |
| <b>Hierarchy Level</b>          | [edit firewall]                                                                                                                                                                            |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.                                                                                                                                          |
| <b>Description</b>              | Configure a load-balance group.                                                                                                                                                            |
| <b>Options</b>                  | <p><b>group-name</b>—Name of load-balance group.</p> <p><b>group-names</b>—Name of next-hop groups to include in the load-balance group set.</p>                                           |
| <b>Required Privilege Level</b> | <p>firewall—To view this statement in the configuration.</p> <p>firewall-control—To add this statement to the configuration.</p>                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring Load-Balance Groups in the Routing Policies, Firewall Filters, and Traffic Policers Feature Guide for Routing Devices</i></li></ul> |

## logical-bandwidth-policer

---

|                                 |                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>logical-bandwidth-policer;</code>                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> firewall <b>policer</b> <i>policer-name</i> ],<br>[edit firewall <b>policer</b> <i>policer-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> firewall <b>policer</b> <i>policer-name</i> ]                                                                                              |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.2.</p> <p>Logical systems support introduced in Junos OS Release 9.3.</p> <p>Support at the [edit dynamic-profiles ... <b>policer</b> <i>policer-name</i>] hierarchy level introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> |
| <b>Description</b>              | For a policer with a bandwidth limit configured as a percentage (using the <b>bandwidth-percent</b> statement), specify that the percentage be based on the shaping rate defined on the logical interface, rather than on the media rate of the physical interface.                                                                              |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Bandwidth Policers on page 79</a></li><li>• <i>Configuring Policers Based on Logical Interface Bandwidth</i></li><li>• <a href="#">bandwidth-percent on page 217</a> statement</li><li>• <b>interface-specific</b> statement</li></ul>                                                       |

## logical-interface-policer

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | logical-interface-policer;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>     | <p>[edit dynamic-profiles <i>profile-name</i> firewall <b>policer</b> <i>policer-name</i>],<br/>         [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i>],<br/>         [edit firewall atm-policer <i>atm-policer-name</i>]<br/>         [edit firewall <b>policer</b> <i>policer-name</i>],<br/>         [edit firewall policer <i>policer-template-name</i>],<br/>         [edit firewall <b>three-color-policer</b> <i>policer-name</i>],<br/>         [edit logical-systems <i>logical-system-name</i> firewall <b>policer</b> <i>policer-name</i>],<br/>         [edit logical-systems <i>logical-system-name</i> firewall <b>three-color-policer</b> <i>name</i>]</p> |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Support at the [edit firewall <b>three-color-policer</b> <i>policer-name</i>] hierarchy level introduced in Junos OS Release 8.2.</p> <p>Logical systems support introduced in Junos OS Release 9.3.</p> <p>Support at the [edit dynamic-profiles ... <b>policer</b> <i>policer-name</i>] and [edit dynamic-profiles ... <b>three-color-policer</b> <i>name</i>] hierarchy levels introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                  |
| <b>Description</b>         | Configure a logical interface policer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |



**NOTE:** Starting in Junos OS Release 12.2R2, on T Series Core Routers only, you can configure an MPLS LSP policer for a specific LSP to be shared across different protocol family types. You must include the logical-interface-policer statement to do so.

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | <p>firewall—To view this statement in the configuration.</p> <p>firewall-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Two-Color and Three-Color Logical Interface Policers on page 175</a></li> <li>• <i>Traffic Policer Types</i></li> <li>• <i>Configuring and Applying Tricolor Marking Policers</i></li> <li>• <a href="#">action on page 214</a></li> <li>• <i>Configuring Gigabit Ethernet Two-Color and Tricolor Policers</i></li> <li>• <i>action</i></li> </ul> |

## loss-priority (Firewall Filter Action)

---

|                                 |                                                                                                                                                                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | loss-priority (high   low);                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>          | [edit firewall family <i>family-name</i> filter <i>filter-name</i> term <i>term-name</i> then],<br>[edit logical-systems <i>logical-system-name</i> firewall family <i>family-name</i> filter <i>filter-name</i> term <i>term-name</i> then]    |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                    |
| <b>Description</b>              | Set the loss priority of incoming packets.                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Firewall Filter Nonterminating Actions</i></li><li>• <a href="#">Policer Color-Marking and Actions on page 22</a></li><li>• <a href="#">Multifield Classification Overview on page 119</a></li></ul> |

## loss-priority high then discard (Three-Color Policer)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | loss-priority high then discard;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>action</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>action</b> ],<br>[edit logical-systems <i>logical-system-name</i> firewall <b>three-color-policer</b> <i>policer-name</i> <b>action</b> ]                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 8.2.<br>Logical systems support introduced in Junos OS Release 9.3.<br>Support at the [edit dynamic-profiles ... <b>action</b> ] hierarchy level introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>              | <p>For packets with high loss priority, discard the packets. The loss priority setting is implicit and is not configurable. Include this statement if you do not want the local router to forward packets that have high packet loss priority.</p> <p>For single-rate three-color policers, the Junos OS assigns high loss priority to packets that exceed the committed information rate and the excess burst size.</p> <p>For two-rate three-color policers, the Junos OS assigns high loss priority to packets that exceed the peak information rate and the peak burst size.</p>                           |
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Three-Color Policer Configuration Overview on page 149</a></li> <li>• <a href="#">Basic Single-Rate Three-Color Policers on page 157</a></li> <li>• <a href="#">Basic Two-Rate Three-Color Policers on page 165</a></li> <li>• <a href="#">Two-Color and Three-Color Logical Interface Policers on page 175</a></li> <li>• <a href="#">Two-Color and Three-Color Physical Interface Policers on page 189</a></li> <li>• <a href="#">Two-Color and Three-Color Policers at Layer 2 on page 43</a></li> <li>• <a href="#">action on page 214</a></li> </ul> |

## output-policer

---


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>output-policer <i>policer-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <a href="#">layer2-policer</a> ],<br>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <a href="#">layer2-policer</a> ]                                                                                                                                                                                                                                                                                                           |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | Apply a single-rate two-color policer to the Layer 2 output traffic at the logical interface. The <b>output-policer</b> and <b>output-three-color</b> statements are mutually exclusive.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>                  | <b><i>policer-name</i></b> —Name of the single-rate two-color policer that you define at the <b>[edit firewall]</b> hierarchy level.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Two-Color and Three-Color Policers at Layer 2 on page 43</a></li><li>• <a href="#">Applying Layer 2 Policers to Gigabit Ethernet Interfaces</a></li><li>• <a href="#">Configuring a Gigabit Ethernet Policer</a></li><li>• <a href="#">input-policer on page 233</a></li><li>• <a href="#">input-three-color on page 234</a></li><li>• <a href="#">layer2-policer on page 235</a></li><li>• <a href="#">logical-interface-policer on page 237</a></li><li>• <a href="#">output-three-color on page 241</a></li></ul> |

## output-three-color

---


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>output-three-color <i>policer-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <a href="#">layer2-policer</a> ]<br>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> <a href="#">layer2-policer</a> ]                                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | Apply a single-rate or two-rate three-color policer to the Layer 2 output traffic at the logical interface. The <b>output-three-color</b> and <b>output-policer</b> statements are mutually exclusive.                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <i>policer-name</i> —Name of the single-rate or two-rate three-color policer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Two-Color and Three-Color Policers at Layer 2 on page 43</a></li> <li>• <a href="#">Applying Layer 2 Policers to Gigabit Ethernet Interfaces</a></li> <li>• <a href="#">Configuring a Gigabit Ethernet Policer</a></li> <li>• <a href="#">input-three-color on page 234</a></li> <li>• <a href="#">input-policer on page 233</a></li> <li>• <a href="#">layer2-policer on page 235</a></li> <li>• <a href="#">logical-interface-policer on page 237</a></li> <li>• <a href="#">output-policer on page 240</a></li> </ul> |

## peak-burst-size

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <code>peak-burst-size bytes;</code>                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i> <b>two-rate</b> ],<br>[edit firewall <b>three-color-policer</b> <i>policer-name</i> <b>two-rate</b> ]                                                                                                                                                                |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Statement introduced in Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>two-rate</b> ] hierarchy level introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                    |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | For a two-rate three-color policer, configure the peak burst size (PBS) as a number of bytes. The PBS defines the maximum number of bytes of unused peak bandwidth capacity that can be accumulated. The accumulated bandwidth allows for moderate periods of bursting traffic that exceeds the peak information rate (PIR) and the committed burst size (CBS). |
| <div>  <p><b>NOTE:</b> When you include the <b>peak-burst-size</b> statement in the configuration, you must also include the <b>committed-burst-size</b> and <b>peak-information-rate</b> statements at the same hierarchy level.</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                 |
| <p>Two-rate three-color policers use a <i>dual-rate dual token bucket algorithm</i> to measure traffic against two rate limits.</p> <ul style="list-style-type: none"> <li>A traffic flow is categorized green if it conforms to both the committed information rate (CIR) and the CBS-bounded accumulation of available committed bandwidth capacity.</li> <li>A traffic flow is categorized yellow if exceeds the CIR and CBS but conforms to the PIR. Packets in a yellow flow are marked with <b>medium-high</b> packet loss priority (PLP) and then passed through the interface.</li> <li>A traffic flow is categorized red if exceeds the PIR and the PBS-bounded accumulation of available peak bandwidth capacity. Packets in a red traffic flow are marked with <b>high</b> PLP and then either passed through the interface or optionally discarded.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>bytes</b> —Number of bytes. You can specify a value in bytes either as a complete decimal number or as a decimal number followed by the abbreviation <b>k</b> (1000), <b>m</b> (1,000,000), or <b>g</b> (1,000,000,000).<br><b>Range:</b> 1500 through 100,000,000,000 bytes                                                                                 |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li><a href="#">Three-Color Policer Configuration Overview on page 149</a></li> <li><a href="#">Policer Bandwidth and Burst-Size Limits</a></li> </ul>                                                                                                                                                                       |

- [Policer Color-Marking and Actions on page 22](#)
- [Dual Token Bucket Algorithms on page 26](#)
- [Determining Proper Burst Size for Traffic Policers on page 34](#)
- [committed-burst-size on page 224](#)
- [committed-information-rate on page 226](#)
- [excess-burst-size on page 228](#)
- [peak-information-rate on page 244](#)

## peak-information-rate

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <code>peak-information-rate bps;</code>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | [edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer name two-rate</b> ],<br>[edit firewall <b>three-color-policer policer-name two-rate</b> ]                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Statement introduced in Junos OS Release 7.4.<br>Support at the [edit dynamic-profiles ... <b>two-rate</b> ] hierarchy level introduced in Junos OS Release 11.4.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                         |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | For a two-rate three-color policer, configure the peak information rate (PIR) as a number of bits per second. The PIR is the maximum rate for traffic arriving at or departing from the interface under peak line conditions. Traffic that exceeds the committed information rate (CIR) and the committed burst size (CBS) is metered to the PIR.                                                                                                                    |
| <div>  <p><b>NOTE:</b> When you include the <b>peak-information-rate</b> statement in the configuration, you must also include the <b>committed-information-rate</b> and <b>peak-burst-size</b> statements at the same hierarchy level.</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>Two-rate three-color policers use a <i>dual-rate dual token bucket algorithm</i> to measure traffic against two rate limits.</p> <ul style="list-style-type: none"> <li>A traffic flow is categorized green if it conforms to both the CIR and the CBS-bounded accumulation of available committed bandwidth capacity.</li> <li>A traffic flow is categorized yellow if exceeds the CIR and CBS but conforms to the PIR. Packets in a yellow flow are marked with <b>medium-high</b> packet loss priority (PLP) and then passed through the interface.</li> <li>A traffic flow is categorized red if exceeds the PIR and the PBS-bounded accumulation of available peak bandwidth capacity. Packets in a red traffic flow are marked with <b>high</b> PLP and then either passed through the interface or optionally discarded.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>bps</b>—Number of bits per second. You can specify a value in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation <b>k</b> (1000), <b>m</b> (1,000,000), or <b>g</b> (1,000,000,000).</p> <p><b>Range:</b></p> <ul style="list-style-type: none"> <li>1500 through 100,000,000,000 bps on EX, M, and T Series routers</li> <li>1500 through 18,446,744,073,709,551,615 bps on Mx Series routers</li> </ul> |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>firewall—To view this statement in the configuration.</p> <p>firewall-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                     |

- Related Documentation**
- [Three-Color Policer Configuration Overview on page 149](#)
  - [Policer Bandwidth and Burst-Size Limits](#)
  - [Policer Color-Marking and Actions on page 22](#)
  - [Dual Token Bucket Algorithms on page 26](#)
  - [Determining Proper Burst Size for Traffic Policers on page 34](#)
  - [committed-burst-size on page 224](#)
  - [committed-information-rate on page 226](#)
  - [excess-burst-size on page 228](#)
  - [peak-burst-size on page 242](#)

## physical-interface-filter


---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | physical-interface-filter;                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | [edit firewall family <i>family-name</i> filter <i>filter-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> firewall family <i>family-name</i> filter <i>filter-name</i> ],<br>[edit routing-instances <i>routing-instance-name</i> firewall family <i>family-name</i> filter <i>filter-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> firewall family <i>family-name</i> filter <i>filter-name</i> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.6.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>              | Configure a physical interface filter. Use this statement to reference a physical interface policer for the specified protocol family.                                                                                                                                                                                                                                                                                                                                              |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Two-Color and Three-Color Physical Interface Policers on page 189</a></li> <li>• <a href="#">physical-interface-policer on page 246</a></li> <li>• <a href="#">policer (Configuring) on page 248</a></li> </ul>                                                                                                                                                                                                                |

## physical-interface-policer

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | physical-interface-policer;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | <p>[edit dynamic-profiles <i>profile-name</i> firewall <b>policer</b> <i>policer-name</i>],</p> <p>[edit firewall <b>policer</b> <i>policer-name</i>],</p> <p>[edit firewall <b>three-color-policer</b> <i>policer-name</i>],</p> <p>[edit logical-system <i>logical-system-name</i> firewall <b>policer</b> <i>policer-name</i>],</p> <p>[edit logical-system <i>logical-system-name</i> <b>three-color-policer</b> <i>policer-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> firewall <b>policer</b> <i>policer-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> firewall <b>three-color-policer</b> <i>policer-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> firewall <b>policer</b> <i>policer-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> firewall <b>three-color-policer</b> <i>policer-name</i>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.6.</p> <p>Support at the [edit dynamic-profiles ... <b>policer</b> <i>policer-name</i>] hierarchy level introduced in Junos Release OS 11.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | <p>Configure an aggregate policer for a physical interface.</p> <p>A physical interface policer can be a two-color or three-color policer. When you apply physical interface policer, to different protocol families on the same logical interface, the protocol families share the same policer instance. This means that rate limiting is performed aggregately for the protocol families for which the policer is applied. This feature enables you to use a single policer instance to perform aggregate policing for different protocol families on the same physical interface. If you want a policer instance to be associated with a protocol family, the corresponding physical interface filter needs to be applied to that protocol family. The policer is not automatically applied to all protocol families configured on the physical interface.</p> <p>In contrast, with logical interface policers there are multiple separate policer instances.</p>                               |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Two-Color and Three-Color Physical Interface Policers on page 189</a></li> <li>• <a href="#">physical-interface-filter on page 245</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## policer (Applying to a Logical Interface)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> policer {     input <i>policer-name</i>;     output <i>policer-name</i>; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | <pre> [edit interfaces <i>interface-name</i> unit <i>unit-number</i>], [edit interfaces <i>interface-name</i> unit <i>unit-number</i> family <i>family</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>unit-number</i>   family <i>family</i>] </pre>                                                                                                                                                                     |
| <b>Description</b>              | <p>Apply a single-rate two-color policer—except for a physical interface policer—to Layer 3 input or output traffic at a logical interface.</p> <ul style="list-style-type: none"> <li>To rate-limit all traffic types, regardless of the protocol family, you can apply a logical interface policer at the logical unit level of a supported interface.</li> <li>To rate-limit traffic of a specific protocol family, you can apply a basic two-color policer, a bandwidth policer, or a logical interface policer at the protocol family level of a supported interface.</li> </ul> |
|                                 | <p> <b>NOTE:</b> You cannot apply a physical interface policer as part of the interface configuration. You can apply a physical interface policer by referencing the policer from a physical interface filter term.</p>                                                                                                                                                                                                                                                                            |
| <b>Options</b>                  | <p><b>input <i>policer-name</i></b>—Name of one policer to evaluate packets received on the interface.</p> <p><b>output <i>policer-name</i></b>—Name of one policer to evaluate packets transmitted on the interface.</p>                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><a href="#">Single-Rate Two-Color Policer Overview on page 59</a></li> <li><a href="#">Bandwidth Policer Overview on page 79</a></li> <li><a href="#">Logical Interface (Aggregate) Policer Overview on page 175</a></li> </ul>                                                                                                                                                                                                                                                                                                                |

## policer (Configuring)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> policer <i>policer-name</i> {     filter-specific;     if-exceeding {         bandwidth-limit <i>bps</i>;         bandwidth-percent <i>number</i>;         burst-size-limit <i>bytes</i>;     }     logical-bandwidth-policer;     logical-interface-policer;     physical-interface-policer;     shared-bandwidth-policer;     then {         <i>policer-action</i>;     } } </pre>                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>     | <p>[edit dynamic-profiles <i>profile-name</i> firewall],<br/> [edit firewall],<br/> [edit logical-systems <i>logical-system-name</i> firewall]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>The <b>out-of-profile</b> policer action added in Junos OS Release 8.1.</p> <p>The <b>logical-bandwidth-policer</b> statement added in Junos OS Release 8.2.</p> <p>Logical systems support introduced in Junos OS Release 9.3.</p> <p>The <b>physical-interface-policer</b> statement introduced in Junos OS Release 9.6.</p> <p>The <b>shared-bandwidth-policer</b> statement added in Junos OS Release 11.2.</p> <p>Support at the [edit dynamic-profiles ... firewall] hierarchy level introduced in Junos OS Release 11.4.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                               |
| <b>Description</b>         | <p>Configure policer rate limits and actions. When included at the [edit firewall] hierarchy level, the <b>policer</b> statement creates a template, and you do not have to configure a policer individually for every firewall filter or interface. To activate a policer, you must include the <b>policer-action</b> modifier in the <b>then</b> statement in a firewall filter term or on an interface.</p>                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Options</b>             | <p><b><i>policer-action</i></b>—One or more actions to take:</p> <ul style="list-style-type: none"> <li>• <b>discard</b>—Discard traffic that exceeds the rate limits.</li> <li>• <b>forwarding-class <i>class-name</i></b>—Specify the particular forwarding class.</li> <li>• <b>loss-priority</b>—Set the packet loss priority (PLP) to <b>low</b>, <b>medium-low</b>, <b>medium-high</b>, or <b>high</b>.</li> </ul> <p><b><i>policer-name</i></b>—Name that identifies the policer. The name can contain letters, numbers, and hyphens (-), and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (" "). Policer names cannot begin with an underscore in the form <b>_.*</b>.</p> <p><b>then</b>—Actions to take on matching packets.</p> |

The remaining statements are explained separately.

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Bandwidth Policer Overview on page 79</a></li> <li>• <i>Configuring Firewall Filters and Policers for VPLS</i></li> <li>• <i>Configuring Multifield Classifiers</i></li> <li>• <a href="#">Logical Interface (Aggregate) Policer Overview on page 175</a></li> <li>• <a href="#">Physical Interface Policer Overview on page 189</a></li> <li>• <a href="#">Statement Hierarchy for Configuring Policers on page 17</a></li> <li>• <a href="#">Single-Rate Two-Color Policer Overview on page 59</a></li> <li>• <i>Using Multifield Classifiers to Set Packet Loss Priority</i></li> <li>• <i>filter (Configuring)</i></li> <li>• <i>priority (Schedulers)</i></li> </ul> |

## policer (Firewall Filter Action)

|                                 |                                                                                                                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>policer <i>policer-name</i>;</code>                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | [edit firewall family <i>family-name</i> filter <i>filter-name</i> term <i>term-name</i> then],<br>[edit logical-systems <i>logical-system-name</i> firewall family <i>family-name</i> filter <i>filter-name</i> term <i>term-name</i> then] |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Logical systems support introduced in Junos OS Release 9.3.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                  |
| <b>Description</b>              | For T Series routers and M320 routers with Enhanced II Flexible PIC Concentrators (FPCs) and the T640 Core Router with Enhanced Scaling FPC4, apply a tricolor marking policer.                                                              |
| <b>Options</b>                  | <i>policer-name</i> —Name of a single-rate two-color policer to use to rate-limit traffic.                                                                                                                                                   |
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Firewall Filter Nonterminating Actions</i></li> <li>• <a href="#">Two-Color Policer Configuration Overview on page 53</a></li> </ul>                                                             |

## prefix-action (Configuring)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>prefix-action <i>prefix-action-name</i> {<br/>    count;<br/>    destination-prefix-length <i>prefix-length</i>;<br/>    filter-specific;<br/>    policer <i>policer-name</i>;<br/>    source-prefix-length <i>prefix-length</i>;<br/>    subnet-prefix-length <i>prefix-length</i>;<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | [edit firewall family inet],<br>[edit logical-systems <i>logical-system-name</i> firewall family inet]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Logical systems support introduced in Junos OS Release 9.3.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>              | Configure a prefix-specific action.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <p><b>count</b>—Enable counter.</p> <p><b>destination-prefix-length <i>prefix-length</i></b>—Destination prefix length.<br/><b>Range:</b> 0 through 32</p> <p><b>filter-specific</b>—Create the prefix-specific set of policers and counters as a filter-specific set. If this option is not specified, the prefix-specific set of policers and counters are created as term-specific.</p> <p><b>policer <i>policer-name</i></b>—Policer name.</p> <p><b>source-prefix-length <i>prefix-length</i></b>—Source prefix length.<br/><b>Range:</b> 0 through 32</p> <p><b>subnet-prefix-length <i>prefix-length</i></b>—Subnet prefix length.<br/><b>Range:</b> 0 through 32</p> |
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Prefix-Specific Counting and Policing Actions on page 101</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## prefix-action (Firewall Filter Action)

---

|                              |                                                                                                                                                                                                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                | <code>prefix-action <i>prefix-action-name</i>;</code>                                                                                                                                                            |
| <b>Hierarchy Level</b>       | [edit firewall family inet filter <i>filter-name</i> term <i>term-name</i> then],<br>[edit logical-systems <i>logical-system-name</i> firewall family inet filter <i>filter-name</i> term <i>term-name</i> then] |
| <b>Release Information</b>   | Statement introduced before Junos OS Release 7.4.<br>Logical systems support introduced in Junos OS Release 9.3.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.                      |
| <b>Description</b>           | Reference a prefix-specific action.                                                                                                                                                                              |
| <b>Options</b>               | <i>prefix-action-name</i> —Name of a prefix-specific action to use to rate-limit traffic.                                                                                                                        |
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• <i>Firewall Filter Nonterminating Actions</i></li><li>• <a href="#">Prefix-Specific Counting and Policing Actions on page 101</a></li></ul>                              |

## single-rate

---

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax                   | <pre>single-rate {<br/>  (color-aware   color-blind);<br/>  committed-information-rate <i>bps</i>;<br/>  committed-burst-size <i>bytes</i>;<br/>  excess-burst-size <i>bytes</i>;<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Hierarchy Level          | [edit dynamic-profiles <i>profile-name</i> firewall <a href="#">three-color-policer name</a> ],<br>[edit firewall <a href="#">three-color-policer policer-name</a> ],<br>[edit logical-systems <i>logical-system-name</i> firewall <a href="#">three-color-policer policer-name</a> ]                                                                                                                                                                                                                                                                                                                                                                                                              |
| Release Information      | Statement introduced before Junos OS Release 7.4.<br>Logical systems support introduced in Junos OS Release 9.3.<br>Support at the [edit dynamic-profiles ... <a href="#">three-color-policer name</a> ] hierarchy level introduced in Junos OS Release 11.4.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description              | <p>Configure a single-rate three-color policer in which marking is based on the committed information rate (CIR), committed burst size (CBS), and excess burst size (EBS).</p> <p>Packets that conform to the CIR or the CBS are assigned low loss priority (green). Packets that exceed the CIR and the CBS but are within the EBS are assigned medium-high loss priority (yellow). Packets that exceed the EBS are assigned high loss priority (red).</p> <p>Green and yellow packets are always forwarded; this action is not configurable. You can configure red packets to be discarded. By default, red packets are forwarded.</p> <p>The remaining statements are explained separately.</p> |
| Required Privilege Level | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Related Documentation    | <ul style="list-style-type: none"><li>• <a href="#">Three-Color Policer Configuration Overview on page 149</a></li><li>• <a href="#">color-aware on page 222</a></li><li>• <a href="#">color-blind on page 223</a></li><li>• <a href="#">two-rate on page 255</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                        |

## three-color-policer (Applying)

|                                 |                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | three-color-policer {<br>(single-rate   two-rate) <i>policer-name</i> ;<br>}                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | [edit firewall family <i>family-name</i> filter <i>filter-name</i> term <i>term-name</i> then]<br>[edit logical-systems <i>logical-system-name</i> firewall family <i>family-name</i> filter <i>filter-name</i> term <i>term-name</i> then]                  |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 7.4.<br><b>single-rate</b> statement added in Junos OS Release 8.2.<br>Logical systems support introduced in Junos OS Release 9.3.<br>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.       |
| <b>Description</b>              | Apply a tricolor marking policer.                                                                                                                                                                                                                            |
| <b>Options</b>                  | <b>single-rate</b> —Named tricolor policer is a single-rate policer.<br><br><b>two-rate</b> —Named tricolor policer is a two-rate policer.<br><br><b><i>policer-name</i></b> —Name of a tricolor policer.                                                    |
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                        |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Applying Tricolor Marking Policers to Firewall Filters</i></li> <li>• <i>Firewall Filter Nonterminating Actions</i></li> <li>• <a href="#">Three-Color Policer Configuration Overview on page 149</a></li> </ul> |

## three-color-policer (Configuring)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> three-color-policer <i>policer-name</i>   <i>uid</i> {   action {     loss-priority high then discard;   }   filter-specific;   logical-interface-policer;   physical-interface-policer;   shared-bandwidth-policer;   single-rate {     (color-aware   color-blind);     committed-burst-size <i>bytes</i>;     committed-information-rate <i>bps</i>;     excess-burst-size <i>bytes</i>;   }   two-rate {     (color-aware   color-blind);     committed-burst-size <i>bytes</i>;     committed-information-rate <i>bps</i>;     peak-burst-size <i>bytes</i>;     peak-information-rate <i>bps</i>;   } } </pre> |
| <b>Hierarchy Level</b>          | [edit dynamic-profiles <i>profile-name</i> firewall],<br>[edit firewall],<br>[edit logical-systems <i>logical-system-name</i> firewall]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>The <b>action</b> and <b>single-rate</b> statements added in Junos OS Release 8.2.</p> <p>Logical systems support introduced in Junos OS Release 9.3.</p> <p>Support at the [edit dynamic-profiles ... firewall] hierarchy level introduced in Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | Configure a three-color policer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                  | <p><b><i>policer-name</i></b>—Name of the three-color policer. Reference this name when you apply the policer to an interface.</p> <p><b><i>uid</i></b>—When you configure a policer at the [edit dynamic-profiles] hierarchy level, you must assign a variable UID as the policer name.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | firewall—To view this statement in the configuration.<br>firewall-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Statement Hierarchy for Configuring Policers on page 17</a></li> <li>• <a href="#">Configuring and Applying Tricolor Marking Policers</a></li> <li>• <a href="#">Three-Color Policer Configuration Guidelines on page 153</a></li> </ul>                                                                                                                                                                                                                                                                                                                              |

- [Basic Single-Rate Three-Color Policers on page 157](#)
- [Basic Two-Rate Three-Color Policers on page 165](#)
- [Two-Color and Three-Color Logical Interface Policers on page 175](#)
- [Two-Color and Three-Color Physical Interface Policers on page 189](#)
- [Two-Color and Three-Color Policers at Layer 2 on page 43](#)

## two-rate

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>two-rate {   (color-aware   color-blind);   committed-information-rate <i>bps</i>;   committed-burst-size <i>bytes</i>;   peak-information-rate <i>bps</i>;   peak-burst-size <i>bytes</i>; }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | <p>[edit dynamic-profiles <i>profile-name</i> firewall <b>three-color-policer</b> <i>name</i>],<br/> [edit firewall <b>three-color-policer</b> <i>policer-name</i>],<br/> [edit logical-systems <i>logical-system-name</i> firewall <b>three-color-policer</b> <i>policer-name</i>]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.<br/> Logical systems support introduced in Junos OS Release 9.3.<br/> Support at the [edit dynamic-profiles ... <b>three-color-policer</b> <i>name</i> hierarchy levels introduced in Junos OS Release 11.4.<br/> Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>              | <p>Configure a two-rate three-color policer in which marking is based on the committed information rate (CIR), committed burst size (CBS), peak information rate (PIR), and peak burst size (PBS).</p> <p>Packets that conform to the CIR or the CBS are assigned low loss priority (green). Packets that exceed the CIR and the CBS but are within the PIR or the PBS are assigned medium-high loss priority (yellow). Packets that exceed the PIR and the PBS are assigned high loss priority (red).</p> <p>Green and yellow packets are always forwarded; this action is not configurable. You can configure red packets to be discarded. By default, red packets are forwarded.</p> <p>The remaining statements are explained separately.</p> |
| <b>Required Privilege Level</b> | <p>firewall—To view this statement in the configuration.<br/> firewall-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Three-Color Policer Configuration Overview on page 149</a></li> <li>• <a href="#">color-aware on page 222</a></li> <li>• <a href="#">color-blind on page 223</a></li> <li>• <a href="#">single-rate on page 252</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |




## CHAPTER 19

# Firewall Filter and Policier Operational Mode Commands

- `clear firewall`
- `show firewall`
- `show firewall filter version`
- `show firewall log`
- `show firewall prefix-action-stats`
- `show policer`

## clear firewall

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                            | <a href="#">Syntax on page 258</a><br><a href="#">Syntax (EX Series Switches) on page 258</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    | clear firewall (all   counter <i>counter-name</i>   filter <i>filter-name</i>   log (all   <i>logical-system-name</i> )   logical-system <i>logical-system-name</i> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Syntax (EX Series Switches)</b>                                                                                                                                                                                                                                                                                                                                                                                                                               | clear firewall (all   counter <i>counter-name</i>   filter <i>filter-name</i>   log (all   <i>logical-system-name</i> )   policer counter (all   counter-id <i>counter-index</i> ))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>logical-system</b> option introduced in Junos OS Release 9.3.</p> <p><b>log</b> option introduced before Junos OS Release 11.4.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Clear statistics about configured firewall filters.</p> <p>When you clear the counters of a filter, this impacts not only the counters shown by the CLI, but also the ones tracked by SNMP2.</p> <p>Subscriber management uses firewall filters to capture and report the volume-based service accounting counters that are used for subscriber billing. The <b>clear firewall</b> command also clears the service accounting counters that are reported to the RADIUS accounting server. For this reason, you must be cautious in specifying which firewall statistics you want to clear.</p>                                                                                                                                 |
| <div>  <p><b>NOTE:</b> The <b>clear firewall</b> command cannot be used to clear the Routing Engine filter counters on a backup Routing Engine that is enabled for graceful Routing Engine switchover (GRES).</p> </div>                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p>If you clear statistics for firewall filters that are applied to Trio-based DPCs and that also use the <b>prefix-action</b> action on matched packets, wait at least 5 seconds before you enter the <b>show firewall prefix-action-stats</b> command. A 5-second pause between issuing the <b>clear firewall</b> and <b>show firewall prefix-action-stats</b> commands avoids a possible timeout of the <b>show firewall prefix-action-stats</b> command.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>all</b>—Clear the packet and byte counts for all filters. On EX Series switches, this option also clears the packet counts for all policer counters.</p> <p><b>counter <i>counter-name</i></b>—Clear the packet and byte counts for a filter counter that has been configured with the counter firewall filter action.</p> <p><b>filter <i>filter-name</i></b>—Clear the packet and byte counts for the specified firewall filter.</p> <p><b>log (all   <i>logical-system-name</i>)</b>—Clear log entries for IPv4 firewall filters that have <b>then log</b> as an action. Use <b>log all</b> to clear all log entries or <b>log <i>logical-system-name</i></b> to clear log entries for the specified logical system.</p> |

**logical-system *logical-system-name***—Clear the packet and byte counts for the specified logical system.

**policer counter (all | counter-id *counter-index*)**—(EX8200 switches only) Clear all policer counters using the **policer counter all** command, or clear a specific policer counter using the **policer counter counter-id *counter-index*** command. The value of *counter-index* can be 0, 1, or 2.

**Required Privilege Level**

clear

**Related Documentation**

- [show firewall on page 260](#)

**List of Sample Output**

[clear firewall all on page 259](#)  
[clear firewall \(counter counter-name\) on page 259](#)  
[clear firewall \(filter filter-name\) on page 259](#)  
[clear firewall \(policer counter all\) \(EX8200 Switch\) on page 259](#)  
[clear firewall \(policer counter counter-id counter-index\) \(EX8200 Switch\) on page 259](#)

## Sample Output

clear firewall all

```
user@host> clear firewall all
```

clear firewall (counter counter-name)

```
user@host> clear firewall counter port-filter-counter
```

clear firewall (filter filter-name)

```
user@host> clear firewall filter ingress-port-filter
```

clear firewall (policer counter all) (EX8200 Switch)

```
user@switch> clear firewall policer counter all
```

clear firewall (policer counter counter-id counter-index) (EX8200 Switch)

```
user@switch> clear firewall policer counter counter-id 0
```

## show firewall

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 260</a><br><a href="#">Syntax (EX Series Switches) on page 260</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Syntax</b>                      | <pre>show firewall &lt;counter <i>counter-name</i>&gt; &lt;detail&gt; &lt;filter (<i>filter-name</i>   regex <i>regular-expression</i>)&gt; &lt;log&gt; &lt;logical-system (all   <i>logical-system-name</i>)&gt; &lt;terse&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Syntax (EX Series Switches)</b> | <pre>show firewall &lt;counter <i>counter-name</i>&gt; &lt;detail&gt; &lt;filter <i>filter-name</i>&gt; &lt;log &lt;(detail   interface <i>interface-name</i>)&gt;&gt; &lt;policer counters &lt;(detail   counter-id <i>counter-index</i> &lt;detail&gt;)&gt;&gt; &lt;terse&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Release Information</b>         | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Option <b>logical-system</b> introduced in Junos OS Release 9.3.</p> <p>Option <b>terse</b> introduced in Junos OS Release 9.4.</p> <p>Option <b>policer counters</b> introduced in Junos OS Release 12.2 for EX Series switches.</p> <p>Option <b>detail</b> introduced in Junos OS Release 12.3 for EX Series switches.</p> <p>Option <b>detail</b> introduced in Junos OS Release 14.1 for MX Series routers.</p> <p>Option <b>regex <i>regular-expression</i></b> introduced in Junos OS Release 14.2.</p>                                                                                                                                                                                                                                                                |
| <b>Description</b>                 | Display enhanced statistics and counters for all configured firewall filters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Options</b>                     | <p><b>none</b>—(Optional) Display statistics and counters for all configured firewall filters and counters. For EX Series switches, this command also displays statistics about all configured policers.</p> <p><b>counter <i>counter-name</i></b>—(Optional) Name of a filter counter.</p> <p><b>detail</b>—(EX Series switches and MX Series routers only) (Optional) Display firewall filter statistics and enhanced policer statistics and counters.</p> <p><b>filter <i>filter-name</i></b>—(Optional) Name of a configured filter.</p> <p><b>filter regex <i>regular-expression</i></b>—(Optional) Regular expression that matches the names of a subset of filters.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>log</b>—(Optional) Display log entries for firewall filters.</p> |

**log** <(detail | interface *interface-name*)>—(EX Series switches only) (Optional) Display detailed log entries of firewall activity or log information about a specific interface.

**policer counters** <(detail | counter-id *counter-index* <detail>)>—(EX8200 switches only) (Optional) Display policer counter statistics in brief or in detail.

**terse**—(Optional) Display firewall filter names only.

**Required Privilege Level** view

- Related Documentation**
- [clear firewall on page 258](#)
  - [show firewall log on page 268](#)
  - *Verifying That Firewall Filters Are Operational*
  - *Verifying That Policers Are Operational*
  - [show policer on page 273](#)
  - *Enhanced Policer Statistics Overview*
  - *enhanced-policer*

- List of Sample Output**
- [show firewall filter \(MX Series Router and EX Series Switch\) on page 264](#)
  - [show firewall filter \(non MX Series Router and EX Series Switch\) on page 264](#)
  - [show firewall filter \(Dynamic Input Filter\) on page 264](#)
  - [show firewall \(Logical Systems\) on page 264](#)
  - [show firewall \(counter counter-name\) on page 265](#)
  - [show firewall log on page 265](#)
  - [show firewall policer counters \(EX8200 Switch\) on page 265](#)
  - [show firewall policer counters \(detail\) \(EX8200 Switch\) on page 265](#)
  - [show firewall policer counters \(counter-id counter-index\) \(EX8200 Switch\) on page 266](#)
  - [show firewall policer counters \(counter-id counter-index detail\) \(EX8200 Switch\) on page 266](#)
  - [show firewall detail on page 266](#)

**Output Fields** [Table 13 on page 262](#) lists the output fields for the **show firewall** command. Output fields are listed in the approximate order in which they appear.

Table 13: show firewall Output Fields

| Field Name                   | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Filter</b>                | <p>Name of a filter that has been configured with the <b>filter</b> statement at the <b>[edit firewall]</b> hierarchy level.</p> <p>Except on EX Series switches:</p> <ul style="list-style-type: none"> <li>When an interface-specific filter is displayed, the name of the filter is followed by the full interface name and by either <b>-i</b> for an input filter or <b>-o</b> for an output filter.</li> <li>When dynamic filters are displayed, the name of the filter is followed by the full interface name and by either <b>-in</b> for an input filter or <b>-out</b> for an output filter. When a logical system-specific filter is displayed, the name of the filter is prefixed with two underscore (__) characters and the name of the logical system (for example, __ls1/filter1).</li> <li>When a service filter is displayed that uses a service set, the separator between the service-set name and the service-filter name is a semicolon (:).</li> </ul> <p><b>NOTE:</b> For <b>bridge family filter</b>, the <b>ip-protocol</b> match criteria is supported only for IPv4 and not for IPv6. This is applicable for line cards that support the Junos Trio chipset, such as the MX 3D MPC line cards.</p> |
| <b>Counters</b>              | <p>Display filter counter information:</p> <ul style="list-style-type: none"> <li><b>Name</b>—Name of a filter counter that has been configured with the <b>counter</b> firewall filter action.</li> <li><b>Bytes</b>—Number of bytes that match the filter term under which the <b>counter</b> action is specified.</li> <li><b>Packets</b>—Number of packets that matched the filter term under which the <b>counter</b> action is specified.</li> </ul> <p><b>NOTE:</b> On M and T series routers, firewall filters cannot count <b>ip-options</b> packets on a per option type and per interface basis. A limited work around is to use the <b>show pfe statistics ip options</b> command to see <b>ip-options</b> statistics on a per Packet Forwarding Engine (PFE) basis. See <i>show pfe statistics ip</i> for sample output.</p>                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Policers</b>              | <p>Display policer information:</p> <ul style="list-style-type: none"> <li><b>Name</b>—Name of policer.</li> <li><b>Bytes</b>—(For two-color policers on MX Series routers and EX Series switches, and for hierarchical policers on MS-DPC, MIC, and MPC interfaces on MX Series routers) Number of bytes that match the filter term under which the policer action is specified. This is only the number out-of-specification (out-of-spec) byte counts, not all the bytes in all packets policed by the policer.<br/>For other combinations of policer type, device, and line card type, this field is blank.</li> <li><b>Packets</b>—Number of packets that matched the filter term under which the policer action is specified. This is only the number of out-of-specification (out-of-spec) packet counts, not all packets policed by the policer.</li> </ul>                                                                                                                                                                                                                                                                                                                                                            |
| <b>Policer Counter Index</b> | (EX8200 switch only) Global management counter ID. The counter ID value ( <i>counter-index</i> ) can be 0, 1, or 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Green</b>                 | (EX8200 switch only) Number of packets within the limits. The number of packets is smaller than the committed information rate (CIR).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Yellow</b>                | (EX8200 switch only) Number of packets partially within the limits. The number of packets is greater than the CIR, but the burst size is within the excess burst size (EBS) limit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

Table 13: show firewall Output Fields (*continued*)

| Field Name          | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Discard</b>      | (EX8200 switch only) Number of discarded packets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Bytes</b>        | (EX8200 switch only) Number of green, yellow, red, or discarded packets in bytes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Packets</b>      | (EX8200 switch only) Number of green, yellow, red, or discarded packets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Filter name</b>  | (EX8200 switch only) Name of the filter with a term associated to a policer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Term name</b>    | (EX8200 switch only) Name of the term associated with a policer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Policer name</b> | (EX8200 switch only) Name of the policer that is associated with a global management counter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| P1-t1               | <ul style="list-style-type: none"> <li>• OOS packet statistics for packets that are marked out-of-specification (out-of-spec) by the policer. Changes to all packets that have out-of-spec actions, such as discard, color marking, or forwarding-class, are included in this counter.</li> <li>• Offered packet statistics for traffic subjected to policing.</li> <li>• Transmitted packet statistics for traffic that is not discarded by the policer. When the policer action is discard, the statistics are the same as the in-spec statistics; when the policer action is non-discard (loss-priority or forwarding-class), the statistics are included in this counter.</li> </ul> |

## Sample Output

### show firewall filter (MX Series Router and EX Series Switch)

```

user@host> show firewall filter test
Filter: test
Counters:
Name Bytes Packets
Counter-1 0 0
Counter-2 0 0
Policers:
Name Bytes Packets
Policer-1 2770 70

```

### show firewall filter (non MX Series Router and EX Series Switch)

```

user@host> show firewall filter test
Filter: test
Counters:
Name Bytes Packets
Counter-1 0 0
Counter-2 0 0
Policers:
Name Bytes Packets
Policer-1 70

```

### show firewall filter (Dynamic Input Filter)

```

user@host> show firewall filter dfwd-ge-5/0/0.1-in
Filter: dfwd-ge-5/0/0.1-in
Counters:
Name Bytes Packets
cl-ge-5/0/0.1-in 0 0

```

### show firewall (Logical Systems)

```

user@host> show firewall

Filter: __lr1/test
Counters:
Name Bytes Packets
icmp 420 5
Filter: __default_bpdu_filter__
Filter: __lr1/inet_filter1
Counters:
Name Bytes Packets
inet_tcp_count 0 0
inet_udp_count 0 0
Filter: __lr1/inet_filter2
Counters:
Name Bytes Packets
inet_icmp_count 0 0
inet_pim_count 0 0
Filter: __lr2/inet_filter1
Counters:
Name Bytes Packets
inet_tcp_count 0 0
inet_udp_count 0 0

```

**show firewall (counter counter-name)**

```

user@host> show firewall counter icmp-counter
Filter: ingress-port-voip-class-filter
Counters:
Name Bytes Packets
icmp-counter 0 0

```

**show firewall log**

```

user@host> show firewall log
Log :

Time Filter Action Interface Protocol Src Addr
 Dest Addr
08:00:53 pfe R ge-1/0/1.0 ICMP 192.168.3.5
 192.168.3.4
08:00:52 pfe R ge-1/0/1.0 ICMP 192.168.3.5
 192.168.3.4
08:00:51 pfe R ge-1/0/1.0 ICMP 192.168.3.5
 192.168.3.4
08:00:50 pfe R ge-1/0/1.0 ICMP 192.168.3.5
 192.168.3.4
08:00:49 pfe R ge-1/0/1.0 ICMP 192.168.3.5
 192.168.3.4
08:00:48 pfe R ge-1/0/1.0 ICMP 192.168.3.5
 192.168.3.4
08:00:47 pfe R ge-1/0/1.0 ICMP 192.168.3.5
 192.168.3.4

```

**show firewall policer counters (EX8200 Switch)**

```

user@switch> show firewall policer counters
Policer Counter Index 0:

 Bytes Packets
Green: 73 15914
Yellow: 9 1962
Discard: 119 25942

Policer Counter Index 1:

 Bytes Packets
Green: 0 0
Yellow: 0 0
Discard: 0 0

Policer Counter Index 2:

 Bytes Packets
Green: 0 0
Yellow: 0 0
Discard: 0 0

```

**show firewall policer counters (detail) (EX8200 Switch)**

```

user@switch> show firewall policer counters detail
Policer Counter Index 0:

 Bytes Packets
Green: 73 15914
Yellow: 9 1962
Discard: 119 25942

```

| Filter name    | Term name    | Policer name     |
|----------------|--------------|------------------|
| myfilter       | polcr-term-1 | myfilter-polcr-1 |
| inet-filter-ae | ae-snmp      | policer-1        |
| inet-filter-ae | ae-ssh       | policer-2        |

## Policer Counter Index 1:

|          | Bytes | Packets |
|----------|-------|---------|
| Green:   | 0     | 0       |
| Yellow:  | 0     | 0       |
| Discard: | 0     | 0       |

| Filter name | Term name | Policer name |
|-------------|-----------|--------------|
|-------------|-----------|--------------|

## Policer Counter Index 2:

|          | Bytes | Packets |
|----------|-------|---------|
| Green:   | 0     | 0       |
| Yellow:  | 0     | 0       |
| Discard: | 0     | 0       |

| Filter name | Term name | Policer name |
|-------------|-----------|--------------|
|-------------|-----------|--------------|

## show firewall policer counters (counter-id counter-index) (EX8200 Switch)

```
user@switch> show firewall policer counters counter-id 0
```

## Policer Counter Index 0:

|          | Bytes | Packets |
|----------|-------|---------|
| Green:   | 73    | 15914   |
| Yellow:  | 9     | 1962    |
| Discard: | 119   | 25942   |

## show firewall policer counters (counter-id counter-index detail) (EX8200 Switch)

```
user@switch> show firewall policer counters counter-id 0 detail
```

## Policer Counter Index 0:

|          | Bytes | Packets |
|----------|-------|---------|
| Green:   | 73    | 15914   |
| Yellow:  | 9     | 1962    |
| Discard: | 119   | 25942   |

| Filter name    | Term name    | Policer name     |
|----------------|--------------|------------------|
| myfilter       | polcr-term-1 | myfilter-polcr-1 |
| inet-filter-ae | ae-snmp      | policer-1        |
| inet-filter-ae | ae-ssh       | policer-2        |

## show firewall detail

```
user@host> show firewall detail
```

```
Filter: __default_bpdu_filter__
```

```
Filter: foo
```

```
Counters:
```

| Name | Bytes    | Packets |
|------|----------|---------|
| c1   | 17652140 | 160474  |

```
Policers:
```

| Name        | Bytes | Packets              |
|-------------|-------|----------------------|
| P1-t1       |       |                      |
| OOS         | 0     | 18286                |
| Offered     | 0     | 18446744073709376546 |
| Transmitted | 0     | 18446744073709358260 |

## show firewall filter version

|                                 |                                                                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show firewall filter version <filter-name>                                                                                                                                                                                                                         |
| <b>Release Information</b>      | Command introduced in Junos OS Release 10.2R2.                                                                                                                                                                                                                     |
| <b>Description</b>              | Display the version number of the installed firewall filter in the Routing Engine.                                                                                                                                                                                 |
| <b>Options</b>                  | <p>none—(Optional) Display the version number of all installed firewall filters.</p> <p>filter-name—(Optional) Name of a configured filter. If you specify the name of a filter, only the version number of that filter is displayed.</p>                          |
| <b>Additional Information</b>   | The initial version number is 1. This number increments by one when you modify the firewall filter settings or an associated prefix action. The maximum version number is 4,294,967,295. When the version number reaches 4,294,967,295, this number is reset to 1. |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                               |
| <b>List of Sample Output</b>    | <a href="#">show firewall filter version on page 267</a>                                                                                                                                                                                                           |
| <b>Output Fields</b>            | <a href="#">Table 14 on page 267</a> lists the output fields for the <b>show firewall filter version</b> command. Output fields are listed in the approximate order in which they appear.                                                                          |

Table 14: show firewall filter version Output Fields

| Field Name | Field Description                                                                                                         |
|------------|---------------------------------------------------------------------------------------------------------------------------|
| Filter     | Name of a filter that has been configured with the <b>filter</b> statement at the <b>[edit firewall]</b> hierarchy level. |
| Version    | Display the version number of the firewall filter.                                                                        |

## Sample Output

### show firewall filter version

```

user@host> show firewall filter version
Filter version information :
Filter Version
test 10

```

## show firewall log

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 268</a><br><a href="#">Syntax (EX Series Switches) on page 268</a>                                                                                                                                                                                                                                                                                                     |
| <b>Syntax</b>                      | <pre>show firewall log &lt;detail&gt; &lt;interface <i>interface-name</i>&gt; &lt;logical-system (<i>logical-system-name</i>   all)&gt;</pre>                                                                                                                                                                                                                                                     |
| <b>Syntax (EX Series Switches)</b> | <pre>show firewall log &lt;detail&gt; &lt;interface <i>interface-name</i>&gt;</pre>                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>         | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>logical-system</b> option introduced in Junos OS Release 9.3.</p>                                                                                                                                                                                          |
| <b>Description</b>                 | Display log information about firewall filters.                                                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>                     | <p><b>none</b>—Display log information about firewall filters.</p> <p><b>detail</b>—(Optional) Display detailed information.</p> <p><b>interface <i>interface-name</i></b>—(Optional) Display log information about a specific interface.</p> <p><b>logical-system (<i>logical-system-name</i>   all)</b>—(Optional) Perform this operation on all logical systems or on a particular system.</p> |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>List of Sample Output</b>       | <a href="#">show firewall log on page 269</a><br><a href="#">show firewall log detail on page 269</a>                                                                                                                                                                                                                                                                                             |
| <b>Output Fields</b>               | <p><a href="#">Table 15 on page 268</a> lists the output fields for the <b>show firewall log</b> command. Output fields are listed in the approximate order in which they appear.</p>                                                                                                                                                                                                             |

**Table 15: show firewall log Output Fields**

| Field Name         | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Time of Log</b> | Time that the event occurred.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Filter</b>      | <ul style="list-style-type: none"> <li>Displays the name of a configured firewall filter or service filter only if the packet hit the filter's <b>log</b> action in a kernel filter (in the control plane). For any traffic that reaches the Routing Engine, the packets hit the <b>log</b> action in the kernel.</li> <li>For all other logged packets (packet hit the filter's <b>log</b> action in the Packet Forwarding Engine), this field displays <b>pfe</b> instead of a configured filter name.</li> </ul> |

Table 15: show firewall log Output Fields (*continued*)

| Field Name          | Field Description                                                                                                                                                                                                                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter Action       | Filter action: <ul style="list-style-type: none"> <li>• <b>A</b>—Accept</li> <li>• <b>D</b>—Discard</li> <li>• <b>R</b>—Reject</li> </ul>                                                                                                                                                                                                                     |
| Name of Interface   | <ul style="list-style-type: none"> <li>• Displays a physical interface name if the packet arrived at a port on a line card.</li> <li>• Displays <b>local</b> if the packet was generated by the device's internal Ethernet interface, <b>em1</b> or <b>fxp1</b>, which connects the Routing Engine with the router's packet-forwarding components.</li> </ul> |
| Name of protocol    | Packet's protocol name: <b>egp</b> , <b>gre</b> , <b>icmp</b> , <b>ipip</b> , <b>ospf</b> , <b>pim</b> , <b>rsvp</b> , <b>tcp</b> , or <b>udp</b> .                                                                                                                                                                                                           |
| Packet length       | Length of the packet.                                                                                                                                                                                                                                                                                                                                         |
| Source address      | Packet's source address.                                                                                                                                                                                                                                                                                                                                      |
| Destination address | Packet's destination address and port.                                                                                                                                                                                                                                                                                                                        |

## Sample Output

### show firewall log

```

user@host>show firewall log
Time Filter Action Interface Protocol Src Addr Dest Addr
13:10:12 pfe D rlsq0.902 ICMP 180.1.177.2 180.1.177.1
13:10:11 pfe D rlsq0.902 ICMP 180.1.177.2 180.1.177.1

```

### show firewall log detail

```

user@host> show firewall log detail
Time of Log: 2004-10-13 10:37:17 PDT, Filter: f, Filter action: accept, Name of
interface: fxp0.0Name of protocol: TCP, Packet Length: 50824, Source address:
172.17.22.108:829,
Destination address: 192.168.70.66:513
Time of Log: 2004-10-13 10:37:17 PDT, Filter: f, Filter action: accept, Name of
interface: fxp0.0
Name of protocol: TCP, Packet Length: 1020, Source address: 172.17.22.108:829,
Destination address: 192.168.70.66:513
Time of Log: 2004-10-13 10:37:17 PDT, Filter: f, Filter action: accept, Name of
interface: fxp0.0
Name of protocol: TCP, Packet Length: 49245, Source address: 172.17.22.108:829,
Destination address: 192.168.70.66:513
Time of Log: 2004-10-13 10:37:17 PDT, Filter: f, Filter action: accept, Name of
interface: fxp0.0
Name of protocol: TCP, Packet Length: 49245, Source address: 172.17.22.108:829,
Destination address: 192.168.70.66:513
Time of Log: 2004-10-13 10:37:17 PDT, Filter: f, Filter action: accept, Name of
interface: fxp0.0

```

```
Name of protocol: TCP, Packet Length: 49245, Source address: 172.17.22.108:829,
Destination address: 192.168.70.66:513
Time of Log: 2004-10-13 10:37:17 PDT, Filter: f, Filter action: accept, Name of
interface: fxp0.0
Name of protocol: TCP, Packet Length: 49245, Source address: 172.17.22.108:829,
Destination address: 192.168.70.66:513
....
```

## show firewall prefix-action-stats

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| List of Syntax                | <a href="#">Syntax (filter-specific mode) on page 271</a><br><a href="#">Syntax (term-specific mode) on page 271</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Syntax (filter-specific mode) | show firewall prefix-action-stats filter <i>filter-name</i> prefix-action <i>prefix-action-name</i><br><from <i>number</i> to <i>number</i> ><br><logical-system ( <i>logical-system-name</i>   all)>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Syntax (term-specific mode)   | show firewall prefix-action-stats filter <i>filter-name</i> prefix-action <i>prefix-action-name-term-name</i><br><from <i>number</i> to <i>number</i> ><br><logical-system ( <i>logical-system-name</i>   all)>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Release Information           | Command introduced before Junos OS Release 7.4.<br><b>logical-system</b> option introduced in Junos OS Release 9.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description                   | <p>Display prefix action statistics about configured firewall filters.</p> <p>If you clear statistics for firewall filters that are applied to MPCs and that also use the <b>prefix-action</b> action on matched packets, wait at least 5 seconds before you enter the <b>show firewall prefix-action-stats</b> command. A 5-second pause between issuing the <b>clear firewall</b> and <b>show firewall prefix-action-stats</b> commands avoids a possible timeout of the <b>show firewall prefix-action-stats</b> command.</p> <p>By default, policers operate in <i>term-specific</i> mode.</p> <p>See “<a href="#">Filter-Specific Policer Overview</a>” on <a href="#">page 89</a> for information about how to configure policers in <i>filter-specific</i> mode.</p> |
| Options                       | <p><b>filter <i>filter-name</i></b>—Name of a filter.</p> <p><b>prefix-action <i>prefix-action-name</i></b>—Name of a prefix action.</p> <p><b>from <i>number</i> to <i>number</i></b>—(Optional) Starting and ending counter or policer.</p> <p><b>logical-system (<i>logical-system-name</i>   all)</b>—(Optional) Perform this operation on all logical systems or on a particular system.</p>                                                                                                                                                                                                                                                                                                                                                                           |
| Required Privilege Level      | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Related Documentation         | <ul style="list-style-type: none"> <li>• <a href="#">clear firewall on page 258</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| List of Sample Output         | <a href="#">show firewall prefix-action-stats on page 272</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Output Fields                 | <a href="#">Table 16 on page 272</a> lists the output fields for the <b>show firewall prefix-action-stats</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

Table 16: show firewall prefix-action-stats Output Fields

| Field Name    | Field Description                                                                                                                                                                                           |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Filter</b> | Filter name.<br><br>Filters configured for logical systems include the name of the filter prefixed with the two underscore characters (__) and the name of the logical system (for example, __ls1/filter1). |

## Sample Output

The following sample output assumes that the policer *act1* is in term mode and that there is a term named *term1* configured in the firewall filter *test*.

### show firewall prefix-action-stats

```

user@host> show firewall prefix-action-stats filter test prefix-action act1-term1 from 0 to 9
Filter: test
Counters:
Name Bytes Packets
act1-0 0 0
act1-1 0 0
act1-2 0 0
act1-3 0 0
act1-4 0 0
act1-5 0 0
act1-6 0 0
act1-7 0 0
act1-8 0 0
act1-9 0 0
Policers:
Name Bytes Packets
act1-0 0 0
act1-1 0 0
act1-2 0 0
act1-3 0 0
act1-4 0 0
act1-5 0 0
act1-6 0 0
act1-7 0 0
act1-8 0 0
act1-9 0 0

```

## show policer

|                                 |                                                                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show policer<br><detail><br><policer-name>                                                                                                                                                                                                                              |
| <b>Release Information</b>      | Command introduced before Junos OS Release 7.4.<br>Option <b>detail</b> introduced in Junos OS Release 12.3.                                                                                                                                                            |
| <b>Description</b>              | Display the number of policed packets for a given policer or an aggregate policer. An aggregate policer is an aggregate of different policers on the same logical interface.                                                                                            |
| <b>Options</b>                  | <b>none</b> —Display the number of policed packets for all configured policers.<br><b>detail</b> —(Optional) Display enhanced statistics and counters for policers.<br><b>policer-name</b> —(Optional) Display the number of policed packets for the specified policer. |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                    |
| <b>List of Sample Output</b>    | <a href="#">show policer (MX Series) on page 274</a><br><a href="#">show policer (non MX Series Router) on page 274</a><br><a href="#">show policer (Aggregate Policer, non MX Series Router) on page 274</a><br><a href="#">show policer detail on page 275</a>        |
| <b>Output Fields</b>            | Table 17 on page 273 lists the output fields for the <b>show policer</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                               |

**Table 17: show policer Output Fields**

| Field Name     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>    | Name of the policer.                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Bytes</b>   | <ul style="list-style-type: none"> <li>(For two-color policers on MX Series routers, and for hierarchical policers on MS-DPC, MIC, and MPC interfaces on MX Series routers)—Total number of bytes policed by the specified policer. For other combinations of policer type, device, and line card type, this field is blank.</li> <li>(T Series and M10i)—Not applicable. The Bytes information is not displayed.</li> </ul> |
| <b>Packets</b> | Total number of packets policed by the specified policer.                                                                                                                                                                                                                                                                                                                                                                    |

Table 17: show policer Output Fields (*continued*)

| Field Name     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Policer detail | <ul style="list-style-type: none"> <li>OOS packet statistics for packets that are marked out-of-specification by the policer. Changes to all packets that have out-of-specification actions, such as discard, color marking, or forwarding-class, are included in this counter.</li> <li>Offered packet statistics for traffic subjected to policing.</li> <li>Transmitted packet statistics for traffic that is not discarded by the policer. When the policer action is discard, the statistics are the same as the within-specification statistics; when the policer action is non-discard (loss-priority or forwarding-class), the statistics are included in this counter.</li> </ul> |

## Sample Output

### show policer (MX Series)

```

user@host> show policer
Policers:
Name Bytes Packets
__default_arp_policer__ 314520 5242
pol-2M-ge-1/2/0.1-inet-i 10372300 103723
pol-2M-ge-1/2/0.1-inet6-i 7727800 77278
pol-2M-ge-1/2/0.1-mp1s-i 7070336 67984
pol-2M-ge-1/2/0.1001-vpls-i 65153700 651537
pol-2M-ge-1/2/0.2001-vpls-i 65180900 651809
pol-2M-ge-1/2/0.3001-ccc-i 62202144 647939

```

### show policer (non MX Series Router)

```

user@host> show policer
Policers:
Name Bytes Packets
__default_arp_policer__ NA 5242
pol-2M-ge-1/2/0.1-inet-i NA 103723
pol-2M-ge-1/2/0.1-inet6-i NA 77278
pol-2M-ge-1/2/0.1-mp1s-i NA 67984
pol-2M-ge-1/2/0.1001-vpls-i NA 651537
pol-2M-ge-1/2/0.2001-vpls-i NA 651809
pol-2M-ge-1/2/0.3001-ccc-i NA 647939

```

### show policer (Aggregate Policer, non MX Series Router)

```

user@host> show policer
Policers:
Name Bytes Packets
__default_arp_policer__ NA 0
P1-ae0.0-log_int-o NA 0
P2-ge-7/0/2.0-inet-o NA 0
P2-ge-7/0/2.0-inet6-o NA 0
__policer_tmpl__-term NA 0
__policer_tmpl__-fc0 NA 0
__policer_tmpl__-fc0 NA 0
__policer_tmpl__-fc1 NA 0
__policer_tmpl__-fc0 NA 0
__policer_tmpl__-fc1 NA 0

```

|                      |    |   |
|----------------------|----|---|
| __policer_tmpl__-fc2 | NA | 0 |
| __policer_tmpl__-fc0 | NA | 0 |
| __policer_tmpl__-fc1 | NA | 0 |
| __policer_tmpl__-fc2 | NA | 0 |
| __policer_tmpl__-fc3 | NA | 0 |

### show policer detail

```
user@host> show policer detail
```

Policers:

| Name                    | Bytes | Packets |
|-------------------------|-------|---------|
| __default_arp_policer__ |       |         |
| OOS                     | 0     | 0       |
| Offered                 | 0     | 496     |
| Transmitted             | 0     | 496     |
| P1-xe-1/0/0.0-inet-i    |       |         |
| OOS                     | 0     | 11329   |
| Offered                 | 0     | 111188  |
| Transmitted             | 0     | 99859   |

