



## Configuring Control Plane Policing

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## Restrictions for Control Plane Policing

The following restrictions apply while Configuring Control Plane Policing:

- Only six among the following protocols can be configured simultaneously: **rip**, **ospf-v6**, **eigrp-v6**, **rip-v6**, **dhcp-snoop-client-to-server**, **dhcp-snoop-server-to-client**, **ndp-router-solicitation**, **ndp-router-advertisement**, **ndp-redirect**, **dhcpv6-client-to-server**, **dhcpv6-server-to-client**, **igrp**.
- For **ospf**, **eigrp** and **ripv2** protocols, control packets which are destined to multicast Mac of the router are policed along with the "**reserve-multicast-group**" option.

## Control Plane Policing

Configure the Control Plane Policing (CoPP) feature on a predefined set of protocols to control the flow of traffic coming to the CPU. The CoPP allows you to set a rate limit on specific protocol packets. These packets are policed, and the packets that conform to the defined rate limit are permitted into the CPU. CoPP protects the packets from being routed to the CPU at an undesired rate that might impact the performance of a switch and the network. In addition, the CoPP protects the CPU from denial of service (DoS) attacks and ensures routing stability, reachability, and packet delivery. You can use Multi-Layer Switching QoS CLI to set the rate limit and policing parameters on a specific protocol.



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**Note** CoPP is supported only on LAN BASE, IP Lite, and IP Service licenses.

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# Configuring Control Plane Policing

Configure the Control Plane Policing (CoPP) feature on a predefined set of protocols to control the flow of traffic coming into the CPU.

## SUMMARY STEPS

1. enable
2. configure terminal
3. mls qos copp protocol { autorp-announce | autorp-discovery | bgp | cdp | cgmp | dai | dhcp-snoop-client-to-server | dhcp-snoop-server-to-client | dhcpv6-client-to-server | dhcpv6-server-to-client | eigrp | eigrp-v6 | energy-wise | igmp-gs-query | igmp-leave | igmp-query | igmp-report | igmp | ipv6-pimv2 | lldp | mld-gs-query | mld-leave | mld-query | mld-report | ndp-redirect | ndp-router-advertisement | ndp-router-solicitation | ospf | ospf-v6 | pimv1 | pxe | rep-hfl | reserve-multicast-group | rip | rip-v6 | rsvp-snoop | stp } police {pps | bps} police rate
4. end
5. show mls qos copp protocols
6. copy running-config startup-config

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b> Switch# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>mls qos copp protocol { autorp-announce   autorp-discovery   bgp   cdp   cgmp   dai   dhcp-snoop-client-to-server   dhcp-snoop-server-to-client   dhcpv6-client-to-server   dhcpv6-server-to-client   eigrp   eigrp-v6   energy-wise   igmp-gs-query   igmp-leave   igmp-query   igmp-report   igmp   ipv6-pimv2   lldp   mld-gs-query   mld-leave   mld-query   mld-report   ndp-redirect   ndp-router-advertisement   ndp-router-solicitation   ospf   ospf-v6   pimv1   pxe   rep-hfl   reserve-multicast-group   rip   rip-v6   rsvp-snoop   stp } police {pps   bps} police rate</b> <b>Example:</b> Switch (config)# mls qos copp protocol cdp police	Configures a packet policer for the specified protocol. For more details about the various parameters, please refer <i>Consolidated Platform Command Reference, Cisco IOS Release 15.2(4)E</i> .

	Command or Action	Purpose
	<pre>bps 10000  Switch(config)# mls qos copp protocol cdp police pps 500</pre>	
<b>Step 4</b>	<p><b>end</b></p> <p><b>Example:</b></p> <pre>Switch(config)# end</pre>	Returns to privileged EXEC mode.
<b>Step 5</b>	<p><b>show mls qos copp protocols</b></p> <p><b>Example:</b></p> <pre>Switch# show mls qos copp protocols</pre>	Displays the CoPP parameters and counters for all the configured protocol.
<b>Step 6</b>	<p><b>copy running-config startup-config</b></p> <p><b>Example:</b></p> <pre>Switch# copy running-config startup-config</pre>	(Optional) Saves your entries in the configuration file.

### What to do next

To clear the CoPP statistics, use the **clear copp counters** command.

## Examples: Configuring CoPP

The following example shows how to enable Control Plane Policing (CoPP) for a specific protocol:

```
Switch (config)# mls qos copp protocol cdp police bps ?
<8000-2000000000> Bits per second (postfix k, m, g optional; decimal point allowed)
Switch (config)# mls qos copp protocol cdp police bps 10000
Switch(config)# mls qos copp protocol cdp police pps ?
<100-100000> Packet per second
Switch(config)# mls qos copp protocol cdp police pps 500
```

The following example shows the CoPP parameters and counters for all the configured protocol:

```
Switch# show running-config | inc copp
Switch#show running-config | inc copp
mls qos copp protocol rep-hfl police pps 5600
mls qos copp protocol lldp police bps 908900
mls qos copp protocol cdp police pps 3434
```

/\* Copp detailed output \*/

```
Switch#show mls qos copp protocols
```

```
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Protocol                Mode      PolicerRate      PolicerBurst
InProfilePackets      OutProfilePackets  InProfileBytes    OutProfileBytes
-----
rep-hfl                 pps       5600              5600
0                       0         0                 0
```

lldp		bps	908900	908900
0	0		0	0
cdp		pps	3434	3434
45172	0		2891008	0