



Implementing LPTS on Cisco IOS XR Software

Local Packet Transport Services (LPTS) maintains tables describing all packet flows destined for the secure domain router (SDR), making sure that packets are delivered to their intended destinations.

For a complete description of the LPTS commands in Cisco IOS XR software, refer to the *LPTS Commands on Cisco IOS XR Software* module of *Cisco IOS XR IP Addresses and Services Command Reference* publication.

Feature History for Implementing LPTS on Cisco IOS XR Software

Release	Modification
Release 3.6.0	The LPTS policer configuration feature was added on the Cisco XR 12000 Series Router.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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Prerequisites for Implementing LPTS

The following prerequisites are required to implement LPTS:

- You must be in a user group associated with a task group that includes the proper task IDs. The command reference guides include the task IDs required for each command. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Information About Implementing LPTS

To implement LPTS features in this document you must understand the following concepts:

- [LPTS Overview, page IC-152](#)
- [LPTS Policers, page IC-152](#)

LPTS Overview

LPTS uses two components to accomplish this task: the port arbitrator and flow managers. The port arbitrator and flow managers are processes that maintain the tables that describe packet flows for a logical router, known as the Internal Forwarding Information Base (IFIB). The IFIB is used to route received packets to the correct Route Processor or line card for processing.

LPTS interfaces internally with all applications that receive packets from outside the router. LPTS functions without any need for customer configuration. However, LPTS **show** commands are provided that allow customers to monitor the activity and performance of LPTS flow managers and the port arbitrator.

LPTS Policers

In Cisco IOS XR, the control packets, which are destined to the Route Processor (RP), are policed using a set of ingress policers in the incoming line cards. These policers are programmed statically during bootup by LPTS components. The policers are applied based on the flow type of the incoming control traffic. The flow type is determined by looking at the packet headers. The policer rates for these static ingress policers are defined in a configuration file, which are programmed on the line card during bootup.

You can change the policer values based on the flow types of these set of ingress policers. You are able to configure the rate per policer per node (locally) and globally using the command-line interface (CLI); therefore, overwriting the static policer values.

How to Implement LPTS

This section contains instructions for the following task:

- [Configuration Examples for Implementing LPTS Policers, page IC-155](#)

Configuring LPTS Policers

This task allows you to configure the LPTS policers.

SUMMARY STEPS

1. **configure**
2. **lpts pifib hardware police** [**location** *node-id*]
3. **flow** {*flow_type*} {**rate** *rate*}

4. **end**
or
commit
5. **show lpts pifib hardware police [location {all | node_id}]**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<p>configure</p> <p>Example: RP/0/0/CPU0:router# configure</p>	Enters global configuration mode.
Step 2	<p>lpts pifib hardware police [location node-id]</p> <p>Example: RP/0/0/CPU0:router(config)# lpts pifib hardware police location 0/2/CPU0 RP/0/0/CPU0:router(config-pifib-policer-per-node)#</p>	<p>Configures the ingress policers and enters pifib policer global configuration mode or pifib policer per node configuration mode.</p> <p>The example shows pifib policer per node configuration mode.</p>
Step 3	<p>flow {flow_type} {rate rate}</p> <p>Example: RP/0/0/CPU0:router(config-pifib-policer-per-node)# flow ospf unicast default rate 20000</p>	<p>Configures the policer for the LPTS flow type. The example shows how to configure the policer for the ospf flow type.</p> <ul style="list-style-type: none"> • Use the <i>flow_type</i> argument to select the applicable flow type. For information about the flow types, see <i>Cisco IOS XR IP Addresses and Services Command Reference</i>. • Use the rate keyword to specify the rate in packets per seconds (PPS). The range is from 0 to 4294967295.

	Command or Action	Purpose
Step 4	<pre>end or commit</pre> <p>Example:</p> <pre>RP/0/0/CPU0:router(config-pifib-policer-global)# end or RP/0/0/CPU0:router(config-pifib-policer-global)# commit</pre>	<p>Saves configuration changes.</p> <ul style="list-style-type: none"> When you issue the end command, the system prompts you to commit changes: <pre>Uncommitted changes found, commit them before exiting(yes/no/cancel)? [cancel]:</pre> <ul style="list-style-type: none"> Entering yes saves configuration changes to the running configuration file, exits the configuration session, and returns the router to EXEC mode. Entering no exits the configuration session and returns the router to EXEC mode without committing the configuration changes. Entering cancel leaves the router in the current configuration session without exiting or committing the configuration changes. Use the commit command to save the configuration changes to the running configuration file and remain within the configuration session.
Step 5	<pre>show lpts pifib hardware police [location {all node_id}]</pre> <p>Example:</p> <pre>RP/0/0/CPU0:router# show lpts pifib hardware police location 0/2/cpu0</pre>	<p>Displays the policer configuration value set.</p> <ul style="list-style-type: none"> (Optional) Use the location keyword to display pre-Internal Forwarding Information Base (IFIB) information for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. Use the all keyword to specify all locations.

Configuration Examples for Implementing LPTS Policers

This section provides the following configuration example:

- [Configuring LPTS Policers: Example, page IC-155](#)

Configuring LPTS Policers: Example

The following example shows how to configure LPTS policers:

```
configure
lpts pifib hardware police
  flow ospf unicast default rate 200
  flow bgp configured rate 200
  flow bgp default rate 100
!
lpts pifib hardware police location 0/2/CPU0
  flow ospf unicast default rate 100
  flow bgp configured rate 300
!
show lpts pifib hardware police location 0/2/CPU0
```

FT - Flow type ID; PPS - Packets per second configured rate

FT	Flow type	Rate (PPS)	Accept/Drop
0	unconfigured-default	101	0/0
1	Fragment	1000	0/0
2	OSPF-mc-known	1500	32550/0
3	OSPF-mc-default	250	0/0
4	OSPF-uc-known	2000	0/0
5	OSPF-uc-default	101	1/0
6	ISIS-known	1500	0/0
7	ISIS-default	250	0/0
8	BGP-known	2000	17612/0
9	BGP-cfg-peer	203	5/0
10	BGP-default	500	4/0
11	PIM-mcast	1500	0/0
12	PIM-ucast	1500	0/0
13	IGMP	1500	0/0
14	ICMP-local	1046	0/0
15	ICMP-app	1046	0/0
16	ICMP-control	1000	0/0
17	ICMP-default	1046	0/0
18	LDP-TCP-known	1500	9965/0
19	LDP-TCP-cfg-peer	1500	0/0
20	LDP-TCP-default	250	0/0
21	LDP-UDP	1000	59759/0
22	All-routers	1500	0/0
23	LMP-TCP-known	1500	0/0
24	LMP-TCP-cfg-peer	1500	0/0
25	LMP-TCP-default	250	0/0
26	LMP-UDP	1000	0/0
27	RSVP-UDP	1000	0/0
28	RSVP	1000	0/0
29	IKE	1000	0/0
30	IPSEC-known	1000	0/0
31	IPSEC-default	250	0/0
32	MSDP-known	1000	0/0
33	MSDP-cfg-peer	1000	0/0
34	MSDP-default	250	0/0

Additional References

35	SNMP	1000	0/0
36	NTP	500	0/0
37	SSH-known	1000	0/0
38	SSH-default	1000	0/0
39	HTTP-known	1000	0/0
40	HTTP-default	1000	0/0
41	SHTTP-known	1000	0/0
42	SHTTP-default	1000	0/0
43	TELNET-known	1000	0/0
44	TELNET-default	500	0/0
45	CSS-known	1000	0/0
46	CSS-default	500	0/0
47	RSH-known	1000	0/0
48	RSH-default	500	0/0
49	UDP-known	2000	0/0
50	UDP-listen	1500	0/0
51	UDP-cfg-peer	1500	0/0
52	UDP-default	101	653/0
53	TCP-known	2000	0/0
54	TCP-listen	2000	0/0
55	TCP-cfg-peer	2000	0/0
56	TCP-default	101	6/0
57	Mcast-known	2000	0/0
58	Mcast-default	101	0/0
59	Raw-listen	250	0/0
60	Raw-default	250	0/0
61	ip-sla	1000	0/0
62	EIGRP	1500	0/0
63	RIP	1500	0/0
64	L2TPv3	2398	0/0
65	PCEP	101	0/0

Additional References

The following sections provide references related to implementing LPTS.

Related Documents

Related Topic	Document Title
Cisco IOS XR LPTS commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	<i>Cisco LPTS Commands on Cisco IOS XR Software</i> module in <i>Cisco IOS XR IP Addresses and Services Command Reference</i>

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIBs	MIBs Link
—	To locate and download MIBs using Cisco IOS XR software, use the Cisco MIB Locator found at the following URL and choose a platform under the Cisco Access Products menu: http://cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml

RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

