Implementing LPTS

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 listed in this module, refer to the LPTS Commands module of *Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Command Reference*.

Feature History for Implementing LPTS

Release	Modification
Release 3.9.0	LPTS was introduced.

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 mentioned in this document you must understand the following concepts:

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:

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. Use one of the following commands:

    • **end**

    • **commit**

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

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure** **Example:** `RP/0/RSP0/CPU0:router# configure`	Enters global configuration mode.

Step 2	**lpts pifib hardware police** [**location** *node-id*]
	
	Example:
	
	`RP/0/RSP0/CPU0:router(config)# lpts pifib hardware`
	`police location 0/2/CPU0`
	`RP/0/RSP0/CPU0:router(config-pifib-policer-per-node)#`
		Configures the ingress policers and enters pifib policer global configuration mode or pifib policer per node configuration mode.
		
		The example shows pifib policer per node configuration mode.

Step 3	**flow** {*flow_type*} {**rate** *rate*}
	
	Example:
	
	`RP/0/RSP0/CPU0:router(config-pifib-policer-per-node)#`
	` flow ospf unicast default rate 20000`
		Configures the policer for the LPTS flow type. The example shows how to configure the policer for the ospf flow type.
		
		• Use the *flow_type* argument to select the applicable flow type. For information about the flow types, see *Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Command Reference*.
		
		• Use the **rate** keyword to specify the rate in packets per seconds (PPS). The range is from 0 to 4294967295.

Step 4	Use one of the following commands:
	
	• **end**
	
	• **commit**
	
	Example:
	
	`RP/0/RSP0/CPU0:router(config)# end`
	or
	`RP/0/RSP0/CPU0:router(config)# commit`
		Saves configuration changes.
		
		• When you issue the **end** command, the system prompts you to commit changes:
		
		`Uncommitted changes found, commit them`
		`before exiting(yes/no/cancel)? [cancel]:`
		
		  ◦ 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	**show lpts pifib hardware police** [**location** {**all** | *node_id*}]	Displays the policer configuration value set.

Command or Action	Purpose
Example: RP/0/RSP0/CPU0:router# show lpts pifib hardware police location 0/2/cpu0	• (Optional) Use the **location** keyword to display pre-Internal Forwarding Information Base (IFIB) information for the designated node. The *node-id* argument is entered in the *rack/slot/module* 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

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
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
                250    1500         0/0
7

ISIS
-default

250

 0
/0
8
 BGP-known

 2000       17612
/0
9
BGP-default 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
                1000    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
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
             500    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
                   2398  1500      0/0
64
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	*Cisco LPTS Commands* module in the *Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Command Reference*

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, 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

Additional References