



## LPTS Commands

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**Note** All commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router that is introduced from Cisco IOS XR Release 6.3.2. References to earlier releases in Command History tables apply to only the Cisco NCS 5500 Series Router.

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- Note**
- Starting with Cisco IOS XR Release 6.6.25, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 560 Series Routers.
  - Starting with Cisco IOS XR Release 6.3.2, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router.
  - References to releases before Cisco IOS XR Release 6.3.2 apply to only the Cisco NCS 5500 Series Router.
  - Cisco IOS XR Software Release 7.0.1 specific updates are not applicable for the following variants of Cisco NCS 540 Series Routers:
    - N540-28Z4C-SYS-A
    - N540-28Z4C-SYS-D
    - N540X-16Z4G8Q2C-A
    - N540X-16Z4G8Q2C-D
    - N540-12Z20G-SYS-A
    - N540-12Z20G-SYS-D
    - N540X-12Z16G-SYS-A
    - N540X-12Z16G-SYS-D

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This chapter describes the Cisco IOS XR software commands used to monitor Local Packet Transport Services on NCS 5000 routers.

For detailed information about LPTS concepts, configuration tasks, and examples, refer to the *IP Addresses and Services Configuration Guide for Cisco NCS 5500 Series Routers*, *IP Addresses and Services Configuration Guide for Cisco NCS 540 Series Routers*, and *IP Addresses and Services Configuration Guide for Cisco NCS 560 Series Routers*.

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## clear lpts ifib statistics

To clear the Internal Forwarding Information Base (IFIB) statistics, use the **clear lpts ifib statistics** command in XR EXEC mode.

```
clear lpts ifib statistics [location node-id]
```

<b>Syntax Description</b>	<b>location node-id</b> Clears the IFIB statistics for the designated node. The <i>node-id</i> argument is entered in standard <i>rack/slot/module</i> notation.				
<b>Command Default</b>	No default behavior or values				
<b>Command Modes</b>	XR EXEC mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 6.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 6.0	This command was introduced.
Release	Modification				
Release 6.0	This command was introduced.				
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.				

Task ID	Task ID	Operations
	lpts	execute

### Examples

The following example shows how to clear the IFIB statistics for the RP:

```
RP/0/RP0/CPU0:router# clear lpts ifib statistics
```

## clear lpts pifib statistics

To clear the Pre-Internal Forwarding Information Base (Pre-IFIB) statistics, use the **clear lpts pifib statistics** command in XR EXEC mode.

```
clear lpts pifib statistics [location node-id]
```

Syntax Description	<b>location node-id</b>
	Clears the Pre-IFIB statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default	No default behavior or values
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Command Modes	XR EXEC mode
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Command History	Release	Modification
	Release 6.0	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
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Task ID	Task ID	Operations
	lpts	execute

### Examples

The following example shows how to clear the Pre-IFIB statistics for the RP:

```
RP/0/RP0/CPU0:router# clear lpts pifib statistics location 0/RP0/CPU0
```

## flow (LPTS)

To configure the policer for the Local Packet Transport Services (LPTS) flow type, use the **flow** command in pifib policer global configuration mode or pifib policer per-node configuration mode. To disable this feature, use the **no** form of this command.

```
flow flow-type rate rate
no flow flow-type rate rate
```

<b>Syntax Description</b>	<b>flow-type</b> List of supported flow types.				
	<b>rate rate</b> Specifies the rate in packets per seconds (PPS). The range is from 0 to 50000.				
<b>Command Default</b>	The default behavior is to load the policer values from the static configuration file that is platform dependant.				
<b>Command Modes</b>	Pifib policer global configuration Pifib policer per-node configuration				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 6.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 6.0	This command was introduced.
Release	Modification				
Release 6.0	This command was introduced.				
<b>Usage Guidelines</b>	The table lists the supported flow types and the parameters that are used to define a policer.				

*Table 1: List of Supported Flow Types*

Flow Type	Description	Default Packet Rate (Recommended)
BGP-default	SRC port 179 and Dest Port 179 with protocol as TCP.	4000
fragment	IPv4/v6 fragmented packets.	1000
ICMP-default	All ICMP type packets.	2500
ISIS default	All ISIS protocol packets.	3500

Flow Type	Description	Default Packet Rate (Recommended)
LDP-UDP	UDP with Destination Port 646.	2000
OSPF-MC-default	OSPFv2 and OSPFv3 ( FF02::5 and FF02::6).	3500
OSPF-UC-default	OSPFv2 and OSPFv3 Unicast DBD packets.	3000
RAW-default	RAW default entry in LPTS.	500
RSVP-default	All RSVP protocol packets ( RSVP signalling, refresh etc...).	14500
TCP-default	All TCP protocol packets (TCP-known, cfg-peer, listen).	25500
Third party applications	All third party application packets.	10000
UDP-default	All UDP protocol packets (UDP-known, CFG-peer, listen).	25500

**Task ID****Task ID****Operations**

config-services read,  
write

**Examples**

The following example shows how to configure the LPTS policer for the bgp-default flow type for all line cards:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# lpts pifib hardware police
RP/0/RP0/CPU0:router(config-pifib-policer-global)# flow bgp-default rate 4000
```

The following example shows how to configure LPTS policer for the Intermediate System-to-Intermediate System (IS-IS)-default flow type for a specific line card:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:routerconfig)# lpts pifib hardware police location 0/2/CPU0
RP/0/RP0/CPU0:router(config-pifib-policer-per-node)# flow isis-default rate 22222
```

## lpts pifib hardware police

To configure the ingress policers and to enter pifib policer global configuration mode or pifib policer per-node configuration mode, use the **lpts pifib hardware police** command in XR Config mode. To set the policer to the default value, use the **no** form of this command.

```
lpts pifib hardware police [ location node-id ] [ flow flow-type { default } [ rate rate ]
no lpts pifib hardware police [ location node-id ] [ flow flow-type { default } [ rate rate ]
```

Syntax Description		
<b>location</b> <i>node-id</i>		(Optional) Designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<b>flow</b> <i>flow-type</i> <b>rate</b> <i>rate</i>		LPTS flow type and the policer rate in packets per second (PPS).
<b>default</b>		Indicates generic flows which are policed with default-rate. For example, BGP (*, 179), any packet with port:179 policed with default rate.

Command Modes	XR Config mode
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Command History	Release	Modification
	Release 6.0	This command was introduced.

Usage Guidelines	Provided that the application and the IP-SLA processing rates support it, you can specify the flow rate for IP-SLA flow entries to up to 1500.
------------------	--

Task ID	Task ID	Operations
	lpts	read, write
	config-services	read, write

### Examples

This example shows how to configure the **lpts pifib hardware police** command for all line cards:

```
RP/0/RP0/CPU0:router(config)# lpts pifib hardware police
RP/0/RP0/CPU0:router(config-pifib-policer-global)#
```

This example shows how to configure the **lpts pifib hardware police** command for a specific line card:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# lpts pifib hardware police location 0/2/CPU0 flow fragment
rate 1000
```

## lpts pifib hardware domain

To configure LPTS ingress domain, use the **lpts pifib hardware domain** command in the configuration mode.

**lpts pifib hardware domain** *name*

<b>Syntax Description</b>	<b>domain</b> <i>name</i>	Specifies ingress domain name.
<b>Command Default</b>	No ingress domain is configured.	
<b>Command Modes</b>	XR Config mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 6.6.3	This command was introduced.
<b>Usage Guidelines</b>	None.	
<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	lpts	read, write

Task ID	Operations
config-services	read, write

This example shows how to configure the ingress domain using the **lpts pifib hardware domain** command:

```
RP/0/RP0/CPU0:router(config)# lpts pifib hardware domain ACCESS
RP/0/RP0/CPU0:router(config-lpts-domain-ACCESS)#
```

## lpts pifib hardware dynamic-flows

To configure LPTS flow types and define the maximum LPTS entries for each flow type in the TCAM use the **lpts pifib hardware dynamic-flows** in configuration mode.

**lpts pifib hardware dynamic-flows location** *node-id* **flow** *flow-type* **max** *maximum-flow-entries*

### Syntax Description

<b>location</b> <i>node-id</i>	Configures Dynamic LPTS per node.  The <i>node-id</i> argument is entered in the rack/slot/module notation.  For more information, use the question mark (?) online help function
<b>flow</b> <i>flow-type</i>	Configures specified flow type.
<b>max</b> <i>maximum-flow-entries</i>	Configures maximum flow entries per node.  <b>Note</b> The maximum flow entry value of zero denotes that a flow type is not configured.  For more information, use the question mark (?) online help function

### Command Default

Dynamic LPTS is disabled

### Command Modes

Configuration

### Command History

Release	Modification
Release 6.2.2	This command was introduced.

### Usage Guidelines

The sum of maximum LPTS entries configured for all flow types must not exceed 8000 entries. User can configure only configurable LPTS flow types listed in below table.

**Table 2: Configurable Flow Types and Default Maximum Flow Entries**

Flow Type	Default Maximum Flow Entries
BGP-known	900
BGP-cfg-peer	900
IP-SLA	50
LDP-TCP-known	300
LDP-TCP-cfg-peer	300
SSH-known	150
Telnet Known	150
NTP known	150
LDP-UDP	300
OSPF-uc-known	300
OSPF-mc-known	600
RSVP known	300
ISIS known	300
TPA	5
PIM-mcast-known	300
IGMP	1200
SNMP	300
VRRP	150
DNS	40
All-routers	300



**Note** You can increase the flow entries for IP-SLA to 500 by decreasing the other flow entries in such a way that the total of flow entries add up to 8000.

**Task ID**

Task ID	Operation
lpts	read, write

Task ID	Operation
config-services	read, write

In this example you will configure the BGP-known and ISIS-known LPTS flow type in the TCAM and define the maximum flow entries as 1800 and 500 for node location 0/1/CPU0.

```
Router#configure
Router(config)#lpts pifib hardware dynamic-flows location 0/1/CPU0
Router(config-pifib-flows-per-node)#flow bgp-known max 1800
Router(config-pifib-flows-per-node)#flow ISIS-known max 500
```

## lpts punt police

To configure the ingress policer for the multicast, and broadcast punted traffic or to configure the ingress policer for the protocol punted traffic, use the **lpts punt police** command in XR Config mode. To set the policer to the default value, use the **no** form of this command.

```
lpts punt police { bcast | domain name | interface name | mcast | protocol { arp | cdp | lacp } } rate rate
```

Syntax Description		
<b>bcast</b>		Specifies broadcast packets.
<b>domain name</b>		Specifies LPTS domain name.
<b>interface name</b>		Specifies specific interface location.
<b>mcast</b>		Specifies multicast packets.
<b>protocol</b>		Specifies protocol packets. Following protocols are supported: <ul style="list-style-type: none"> <li>• ARP</li> <li>• CDP</li> <li>• LACP</li> </ul>
<b>rate</b> <i>rate</i>		LPTS policer rate in packets per second (PPS). <p><b>Note</b> The PPS minimum and maximum range depends on a platform.</p>

**Command Default** No rate limit is configured.

**Command Modes** XR Config mode

Command History	Release	Modification
	Release 6.6.3	This command was introduced.

**Usage Guidelines** After configuring the policer rates, the commit is accepted successfully. However, it is recommended to verify if there's any error message captured in the syslog.

Task ID	Task ID	Operations
	lpts	read, write
	config-services	read, write

### Examples

This example shows how to configure the rate limit the multicast, broadcast and protocol punted traffic using the **lpts punt police** command at the global level:

```
RP/0/RP0/CPU0:router(config)# lpts punt police
RP/0/RP0/CPU0:router(config-lpts-punt-policer-global)# bcast rate 1000
RP/0/RP0/CPU0:router(config-lpts-punt-policer-global)# mcast rate 1000
RP/0/RP0/CPU0:router(config-lpts-punt-policer-global)# protocol arp rate 700
RP/0/RP0/CPU0:router(config-lpts-punt-policer-global)# protocol lacp rate 700
```

## show lpts bindings

To display the binding information in the Port Arbitrator, use the **show lpts bindings** command in XR EXEC mode.

```
show lpts bindings [location node-id] [client-id {clnl | ipsec | ipv4-io | ipv6-io | mpa | tcp | test | udp
| raw}] [brief] [vrf vrf-name]
```

Syntax Description	location node-id
	(Optional) Displays information for the specified node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
	<b>client-id</b> (Optional) Type of client. It can be one of the following values: <ul style="list-style-type: none"> <li>• <b>clnl</b> —ISO connectionless protocol (used by IS-IS)</li> <li>• <b>ipsec</b> —Secure IP</li> <li>• <b>ipv4-io</b> —Traffic processed by the IPv4 stack</li> <li>• <b>ipv6-io</b> —Traffic processed by the IPv6 stack</li> <li>• <b>mpa</b> —Multicast Port Arbitrator (multicast group joins)</li> <li>• <b>tcp</b> —Transmission Control Protocol</li> <li>• <b>test</b> —Test applications</li> <li>• <b>udp</b> —User Datagram Protocol</li> <li>• <b>raw</b> —Raw IP</li> </ul>

---

**brief** (Optional) Displays summary output.

---

**vrf** *vrf-name* (Optional) Name of assigned VRF.

---



---

**Command Default** No default behavior or values

---

**Command Modes** XR EXEC mode

---

Command History	Release	Modification
	Release 6.0	This command was introduced.

---



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**Usage Guidelines** The **show lpts bindings** command displays the Local Packet Transport Services (LPTS) bindings (requests to receive traffic of a particular type). Bindings are aggregated into flows by the LPTS Port Arbitrator; flows are then programmed into the Internal Forwarding Information Base (IFIB) and Pre-IFIB to direct packets to applications.

If you specify the optional **client-id** keyword and type of client, only bindings from that client are shown. If you specify the optional **location** keyword and *node-id* argument, only bindings from clients on that node are displayed.

---

Task ID	Task ID	Operations
	lpts	read

---



---

**Examples** The following sample output is from the **show lpts bindings** command, displaying bindings for all client ID types:

```
RP/0/RP0/CPU0:router# show lpts bindings

@ - Indirect binding; Sc - Scope

-----
Location      :0/1/CPU0
Client ID     :IPV4_IO
Cookie        :0x00000001
Clnt Flags   :
Layer 3       :IPV4
Layer 4       :ICMP
Local Addr    :any
Remote Addr   :any
Local Port    :any
Remote Port   :any
Filters       :Type / Intf or Pkt Type / Source Addr / Location
INCLUDE_TYPE / type 8
INCLUDE_TYPE / type 13
INCLUDE_TYPE / type 17
-----

Location      :0/2/CPU0
Client ID     :IPV4_IO
Cookie        :0x00000001
Clnt Flags   :
```

```

Layer 3      :IPV4
Layer 4      :ICMP
Local Addr  :any
Remote Addr :any
Local Port  :any
Remote Port :any
Filters     :Type / Intf or Pkt Type / Source Addr / Location
  INCLUDE_TYPE / type 8
  INCLUDE_TYPE / type 13
  INCLUDE_TYPE / type 17
-----
Location    :0/RP1/CPU0
Client ID   :TCP
Cookie      :0x4826f1f8
Clnt Flags  :REUSEPORT
Layer 3     :IPV4
Layer 4     :TCP
Local Addr  :any
Remote Addr :any
Local Port  :7
Remote Port :any
-----
Location    :0/RP1/CPU0
Client ID   :TCP
Cookie      :0x4826fa0c
Clnt Flags  :REUSEPORT
Layer 3     :IPV4
Layer 4     :TCP
Local Addr  :any
Remote Addr :any
Local Port  :9
Remote Port :any
-----
Location    :0/RP1/CPU0
Client ID   :TCP
Cookie      :0x482700d0
Clnt Flags  :REUSEPORT
Layer 3     :IPV4
Layer 4     :TCP
Local Addr  :any
Remote Addr :any
Local Port  :19
Remote Port :any
-----
Location    :0/RP1/CPU0
Client ID   :IPV4_IO
Cookie      :0x00000001
Clnt Flags  :
Layer 3     :IPV4
Layer 4     :ICMP
Local Addr  :any
Remote Addr :any
Local Port  :any
Remote Port :any
Filters     :Type / Intf or Pkt Type / Source Addr / Location
  INCLUDE_TYPE / type 8
  INCLUDE_TYPE / type 13
  INCLUDE_TYPE / type 17

```

This table describes the significant fields shown in the display.

**Table 3: show lpts bindings Command Field Descriptions**

Field	Description
Location	Node location, in the format of <i>rack/slot/module</i> .
Client ID	LPTS client type.
Cookie	Client's unique tag for the binding.
Clnt Flags	REUSEPORT -- client has set the SO_REUSEPORT or SO_REUSEADDR socket option.
Layer 3	Layer 3 protocol (IPv4, IPv6, CLNL).
Layer 4	Layer 4 protocol (TCP, UDP).
Local Addr	Local (destination) address.
Remote Addr	Remote (source) address.
Local Port	Local (destination) TCP or UDP port, or ICMP/IGMP packet type, or IPsec SPI.
Remote Port	Remote (source) TCP or UDP port.

The following sample output is from the **show lpts bindings brief** command:

```
RP/0/RP0/CPU0:router# show lpts bindings brief

@ - Indirect binding; Sc - Scope

Location  Clnt Sc L3   L4   VRF-ID  Local,Remote Address.Port  Interface
-----
0/1/CPU0  IPV4 LO IPV4  ICMP *      any.ECHO any          any
0/1/CPU0  IPV4 LO IPV4  ICMP *      any.TSTAMP any          any
0/1/CPU0  IPV4 LO IPV4  ICMP *      any.MASKREQ any          any
0/1/CPU0  IPV6 LO IPV6  ICMP6 *     any.ECHOREQ any          any
0/3/CPU0  IPV4 LO IPV4  ICMP *      any.ECHO any          any
0/3/CPU0  IPV4 LO IPV4  ICMP *      any.TSTAMP any          any
```

This table describes the significant fields shown in the display.

**Table 4: show lpts bindings brief Command Field Descriptions**

Field	Description
Location	Node location, in the format of <i>rack/slot/module</i> .
Clnt ID	LPTS client type.
Sc	Scope (LR = Logical-Router, LO = Local).
Layer 3	Layer 3 protocol.
Layer 4	Layer 4 protocol.

Field	Description
VRF-ID	VPN routing and forwarding (VRF) identification (vrfid) number.
Local,Remote Address.Port	Local (destination) and Remote (source) addresses and ports or packet types.
Interface	Inbound interface.

## show lpts clients

To display the client information for the Port Arbitrator, use the **show lpts clients** command in XR EXEC mode.

**show lpts clients** [**times**]

**Syntax Description** `times` (Optional) Displays information about binding request rates and service times.

**Command Default** No default behavior or values

**Command Modes** XR EXEC mode

**Command History**

Release	Modification
Release 6.0	This command was introduced.

**Usage Guidelines** The **show lpts clients** command displays the clients connected to the local packet transport services (LPTS) port arbitrator (PA).

**Task ID**

Task ID	Operations
lpts	read

### Examples

The following sample output is from the **show lpts clients** command:

```
RP/0/RP0/CPU0:router# show lpts clients

o_flg - open flags ; clid - client id
clid      loc      flags  o_flg
RAW (3)   0/RP1/CPU0     0x1    0x2
TCP (1)   0/RP1/CPU0     0x1    0x2
IPV4_IO (5) 0/1/CPU0       0x3    0x2
IPV4_IO (5) 0/2/CPU0       0x3    0x2
IPV4_IO (5) 0/RP1/CPU0     0x3    0x2
MPA (7)   0/RP1/CPU0     0x3    0x0
```

This table describes the significant fields shown in the display.

**Table 5: show lpts clients Command Field Descriptions**

Field	Description
Clid	LPTS client ID.
Loc	Node location, in the format <i>rack/slot/module</i> .
Flags	Client flags. <b>Note</b> The client flags are used only for debugging purposes.
o_flags	Open flags. <b>Note</b> The open flags are used only for debugging purposes.

The following sample output is from the **show lpts clients times** command. The output shows samples for the last 30 seconds, 1 minute, 5 minutes, 10 minutes, and a total (if nonzero). The number of transactions, number of updates, and the minimum/average/maximum time in milliseconds to process each transaction is shown.

```
RP/0/RP0/CPU0:router# show lpts clients times

o_flg - open flags ; clid - client id
clid      loc      flags  o_flg
RAW(3)    0/RP1/CPU0    0x1    0x2
  30s:2 tx 2 upd 2/2/3ms/tx
  1m:2 tx 2 upd 2/2/3ms/tx
  5m:2 tx 2 upd 2/2/3ms/tx
 10m:2 tx 2 upd 2/2/3ms/tx
 total:2 tx 2 upd 2/-/3ms/tx
TCP(1)    0/RP1/CPU0    0x1    0x2
 total:3 tx 3 upd 1/-/1ms/tx
IPV4_IO(5) 0/1/CPU0      0x3    0x2
 total:1 tx 1 upd 0/-/0ms/tx
IPV4_IO(5) 0/2/CPU0      0x3    0x2
 total:1 tx 1 upd 1/-/1ms/tx
IPV4_IO(5) 0/RP1/CPU0    0x3    0x2
 total:1 tx 1 upd 3/-/3ms/tx
MPA(7)    0/RP1/CPU0    0x3    0x0
```

## show lpts flows

To display information about Local Packet Transport Services (LPTS) flows, use the **show lpts flows** command in XR EXEC mode.

**show lpts flows [brief]**

### Syntax Description

**brief** (Optional) Displays summary output.

**Command Default** No default behavior or values

**Command Modes** XR EXEC mode

Command History	Release	Modification
	Release 6.0	This command was introduced.

**Usage Guidelines** The **show lpts flows** command is used to display LPTS flows, which are aggregations of identical binding requests from multiple clients and are used to program the LPTS Internal Forwarding Information Base (IFIB) and Pre-IFIB.

Task ID	Task ID	Operations
	lpts	read

### Examples

The following sample output is from the **show lpts flows** command:

```
RP/0/RP0/CPU0:router# show lpts flows
```

```
-----
L3-proto      : IPV4 (2)
L4-proto      : ICMP (1)
VRF-ID        : * (000000000)
Local-IP      : any
Remote-IP     : any
Pkt-Type      : 8
Remote-Port   : any
Interface     : any (0x0)
Flow-type     : ICMP-local
Min-TTL       : 0
Slice         : RAWIP4_FM
Flags         : 0x20 (in Pre-IFIB)
Location      : (drop)
Element References
location / count / scope
* / 3 / LOCAL
```

This table describes the significant fields shown in the display.

**Table 6: show lpts flows Command Field Descriptions**

Field	Description
L3-proto	Layer 3 protocol (IPv4, IPv6, CLNL).
L4-proto	Layer 4 protocol (TCP, UDP, and so on).
VRF-ID	VPN routing and forwarding (VRF) identification (vrfid) number.
Local-IP	Local (destination) IP address.

Field	Description
Remote-IP	Remote (source) IP address.
Pkt-Type	ICMP or IGMP packet type.
Remote-Port	Remote (source) TCP or UDP port.
Interface	Ingress interface.
Flow-type	Flow classification for hardware packet policing.
Min-TTL	Minimum time-to-live value expected from in the incoming packet. Any packet received with a lower TTL value will be dropped.
Slice	IFIB slice.
Flags	<ul style="list-style-type: none"> <li>• Has FGID: Delivered to multiple destinations.</li> <li>• No IFIB entry: IFIB entry suppressed.</li> <li>• Retrying FGID allocation.</li> <li>• In Pre-IFIB: Entry is in Pre-IFIB as well.</li> <li>• Deliver to one: If multiple bindings, will deliver to only one.</li> </ul>
Location	<i>rack/slot/module</i> to deliver to.
Element References	<ul style="list-style-type: none"> <li>• location: <i>rack/slot/module</i> of client.</li> <li>• count: number of clients at that location.</li> <li>• scope: binding scope (LR:Logical Router, LOCAL:Local).</li> </ul>

The following sample output is from the **show lpts flows brief** command:

```
RP/0/RP0/CPU0:router# show lpts flows brief
+ - Additional delivery destination; L - Local interest; P - In Pre-IFIB

L3  L4  VRF-ID  Local, Remote Address.Port  Interface  Location  LP
-----
IPV4 ICMP *      any.ECHO any          any        (drop)    LP
IPV4 ICMP *      any.TSTAMP any          any        (drop)    LP
IPV4 ICMP *      any.MASKREQ any          any        (drop)    LP
IPV6 ICMP6 *     any.ECHOREQ any          any        (drop)    LP
IPV4 any  default 224.0.0.2 any          Gi0/1/0/1  0/5/CPU0  P
```

This table describes the significant fields shown in the display.

**Table 7: show lpts flows brief Command Field Descriptions**

Field	Description
L3	Layer 3 protocol (IPv4, IPv6, CLNL).
L4	Layer 4 protocol.
VRF-ID	VPN routing and forwarding (VRF) identification (vrfid) number.

Field	Description
Local, Remote Address.Port	Local (destination) and remote (source) IP addresses and TCP or UDP ports, or ICMP/IGMP packet types, or IPsec Security Parameters Indices.
Interface	Ingress interface.
Location	Delivery location: <ul style="list-style-type: none"> <li>• <i>rack/slot/module</i>—Individual location.</li> <li>• [0xNNNNN]—Multiple locations (platform-dependent value).</li> <li>• (drop)—Do not deliver to any application.</li> </ul>
LP	Local interest (to be processed by IPv4 or IPv6 stack directly) or entry is resident in Pre-IFIB.

## show lpts ifib

To display the entries in the Internal Forwarding Information Base (IFIB), use the **show lpts ifib** command in XR EXEC mode.

```
show lpts ifib [entry] [{type {bgp4 | bgp6 | isis | mcast4 | mcast6 | ospf-mc4 | ospf-mc6 | ospf4 | ospf6 | raw4 | raw6 | tcp4 | tcp6 | udp4 | udp6} | all}] [brief [statistics]] [slices] [times] [location node-id]
```

### Syntax Description

<b>entry</b>	(Optional) Displays the IFIB entries.
<b>type</b>	(Optional) Displays the following protocol types. <ul style="list-style-type: none"> <li>• <b>bgp4</b> —IPv4 Border Gateway Protocol (BGP) slice</li> <li>• <b>bgp6</b> —IPv6 BGP slice</li> <li>• <b>isis</b> —Intermediate System-to-Intermediate System (IS-IS) slice</li> <li>• <b>mcast4</b> —IPv4 multicast slice</li> <li>• <b>mcast6</b> —IPv6 multicast slice</li> <li>• <b>ospf-mc4</b> —IPv4 Open Shortest Path First (OSPF) multicast slice</li> <li>• <b>ospf-mc6</b> —IPv6 OSPF multicast slice</li> <li>• <b>ospf4</b> —IPv4 OSPF slice</li> <li>• <b>ospf6</b> —IPv6 OSPF slice</li> <li>• <b>raw4</b> —IPv4 raw IP</li> <li>• <b>raw6</b> —IPv6 raw IP</li> <li>• <b>tcp4</b> —IPv4 Transmission Control Protocol (TCP) slice</li> <li>• <b>tcp6</b> —IPv6 TCP slice</li> <li>• <b>udp4</b> —IPv4 UDP slice</li> <li>• <b>udp6</b> —IPv6 UDP slice</li> </ul>
<b>all</b>	Displays all IFIB types.
<b>brief</b>	(Optional) Displays the IFIB entries in brief format.
<b>statistics</b>	(Optional) Displays the IFIB table with statistics information.

<b>slices</b>	(Optional) Displays IFIB slices.
<b>times</b>	(Optional) Displays the IFIB update transaction times.
<b>location</b> <i>node-id</i>	(Optional) Specifies the location of the Flow Manager. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

**Command Default** No default behavior or values

**Command Modes** XR EXEC mode

Command History	Release	Modification
	Release 6.0	This command was introduced.

**Usage Guidelines** Use this command to display detailed information about the entries in an IFIB slice. This command is useful for debugging problems with delivering packets to applications.

When the **statistics** keyword is used, detailed statistics are displayed for packet count, number of entries in each slice, and a total entries count.

Task ID	Task ID	Operations
	lpts	read

## Examples

The following sample output is from the **show lpts ifib** command:

```
RP/0/RP0/CPU0:router# show lpts ifib

O - Opcode; A - Accept Counter; D - Drop Counter; F - Flow Type; L - Listener Tag;
I - Local Flag; Y - SYN; T - Min TTL; DV - Deliver; DP - Drop; RE - Reassemble; na - Not
Applicable
-----
VRF-ID          : default (0x60000000)
Port/Type       : any
Source Port     : any
Dest IP        : any
Source IP       : any
Layer 4         : 88 (88)
Interface       : any (0x0)
O/A/D/F/L/I/Y/T : DELIVER/0/0/IPv4_STACK/0/0/0
Deliver List    : 0/5/CPU0
-----
```

This table describes the significant fields shown in the display.

**Table 8: show lpts ifib entries Command Field Descriptions**

Field	Description
VRF-ID	VPN routing and forwarding (VRF) identification (vrfid) number.
Port/Type	Destination (local) TCP or UDP port number, or ICMP/IGMP packet type, or IPSec Security Parameters Index.t2222
Source Port	Source (remote) TCP or UDP port.
Dest IP	Destination (local) IP address.
Source IP	Source (remote) IP address.
Layer 4	Layer 4 protocol number (6 = TCP). <b>Note</b> Only the common Layer 4 protocol names are displayed.
Interface	Ingress interface name.
O/S/P/R/L/I/Y	<ul style="list-style-type: none"> <li>• O: Opcode (DELIVER, DROP, or REASSEMBLE)</li> <li>• S: Stats counter</li> <li>• P: Packet forwarding priority (LO, MED, or HIGH)</li> <li>• R: Rate limit (LO, MED, or HIGH)</li> <li>• L: Listener tag (IPv4_STACK, IPv6_STACK, or CLNL_STACK)</li> <li>• I: Local-interest flag (0 or 1)</li> <li>• Y: TCP SYN flag (0 or 1)</li> </ul>
Deliver List	<ul style="list-style-type: none"> <li>• (drop)—Drop packet</li> <li>• rack/slot/module—Deliver to single destination</li> <li>• [0xNNNN]—Deliver to multiple destinations (platform-dependent format)</li> </ul>

The following sample output is from the **show lpts ifib brief** command:

```
RP/0/RP0/CPU0:router# show lpts ifib brief
```

Slice	Local, Remote Address.Port	L4	Interface	Dlvr
TCP4	any.7 any	TCP	any	0/RP1/CPU0
TCP4	any.9 any	TCP	any	0/RP1/CPU0

The following sample output is from the **show lpts ifib brief statistics** command:

```
RP/0/RP0/CPU0:router# show lpts ifib brief statistics
```

Slice	Local, Remote Address.Port	L4	Interface	Accept/Drop
TCP4	any.7 any	TCP	any	0/0
TCP4	any.9 any	TCP	any	0/0
TCP4	any.19 any	TCP	any	0/0

```

Slice      Num. Entries  Accepts/Drops
-----
TCP4       3              0/0
Total      3              0/0

```

## show lpts ifib slices

To display Internal Forwarding Information Base (IFIB) slice information, use the **show lpts ifib slices** command in XR EXEC mode.

```
show lpts ifib slices [type {bgp4 | bgp6 | isis | mcast4 | mcast6 | ospf-mc4 | ospf-mc6 | ospf4 | ospf6 |
raw4 | raw6 | tcp4 | tcp6 | udp4 | udp6}] [all] [statistics] [times]
```

### Syntax Description

<b>type</b>	(Optional) Enter protocol types. <ul style="list-style-type: none"> <li>• <b>bgp4</b> —IPv4 Border Gateway Protocol (BGP) slice</li> <li>• <b>bgp6</b> —IPv6 BGP slice</li> <li>• <b>isis</b> —Intermediate System-to-Intermediate System (IS-IS) slice</li> <li>• <b>mcast4</b> —IPv4 multicast slice</li> <li>• <b>mcast6</b> —IPv6 multicast slice</li> <li>• <b>ospf-mc4</b> —IPv4 Open Shortest Path First (OSPF) multicast slice</li> <li>• <b>ospf-mc6</b> —IPv6 OSPF multicast slice</li> <li>• <b>ospf4</b> —IPv4 OSPF slice</li> <li>• <b>ospf6</b> —IPv6 OSPF slice</li> <li>• <b>raw4</b> —IPv4 raw IP</li> <li>• <b>raw6</b> —IPv6 raw IP</li> <li>• <b>tcp4</b> —IPv4 Transmission Control Protocol (TCP) slice</li> <li>• <b>tcp6</b> —IPv6 TCP slice</li> <li>• <b>udp4</b> —IPv4 UDP slice</li> <li>• <b>udp6</b> —IPv6 UDP slice</li> </ul>
<b>all</b>	(Optional) Displays all entries.
<b>statistics</b>	(Optional) Displays the statistics for slice lookups.
<b>times</b>	(Optional) Displays the IFIB update transaction times.

### Command Default

No default behavior or values

### Command Modes

XR EXEC mode

### Command History

Release	Modification
Release 6.0	This command was introduced.

**Usage Guidelines**

Use the **show lpts ifib slices** command when troubleshooting IFIB entries and slice assignments. This command is especially useful when troubleshooting problems with delivering packets to applications.

**Task ID**

Task ID	Task	Operations
	lpts	read

**Examples**

The following sample output is from the **show lpts ifib slices** command:

```
RP/0/RP0/CPU0:router# show lpts ifib slices
```

Slice	L3	L4	Port	Location
RAWIP4	IPV4	any	any	0/RP0/CPU0
RAWIP6	IPV6	any	any	0/RP0/CPU0
OSPF4	IPV4	OSPF	any	0/RP0/CPU0
OSPF6	IPV6	OSPF	any	0/RP0/CPU0
OSPF_MC4	IPV4	any	any	0/RP0/CPU0
OSPF_MC6	IPV6	any	any	0/RP0/CPU0
BGP4	IPV4	TCP	179	0/RP0/CPU0
BGP6	IPV6	TCP	179	0/RP0/CPU0
UDP4	IPV4	UDP	any	0/RP0/CPU0
UDP6	IPV6	UDP	any	0/RP0/CPU0
TCP4	IPV4	TCP	any	0/RP0/CPU0
TCP6	IPV6	TCP	any	0/RP0/CPU0
ISIS	CLNS	-	any	0/RP0/CPU0
MCAST4	IPV4	any	any	0/RP0/CPU0
MCAST6	IPV6	any	any	0/RP0/CPU0

The following sample output is from the **show lpts ifib slices times** command:

```
RP/0/RP0/CPU0:router# show lpts ifib slices times
```

Slice	L3	L4	Port	Location
RAWIP4	IPV4	any	any	0/RP0/CPU0
RAWIP6	IPV6	any	any	0/RP0/CPU0
OSPF4	IPV4	OSPF	any	0/RP0/CPU0
OSPF6	IPV6	OSPF	any	0/RP0/CPU0
OSPF_MC4	IPV4	any	any	0/RP0/CPU0
OSPF_MC6	IPV6	any	any	0/RP0/CPU0
BGP4	IPV4	TCP	179	0/RP0/CPU0
BGP6	IPV6	TCP	179	0/RP0/CPU0
UDP4	IPV4	UDP	any	0/RP0/CPU0
UDP6	IPV6	UDP	any	0/RP0/CPU0
TCP4	IPV4	TCP	any	0/RP0/CPU0
TCP6	IPV6	TCP	any	0/RP0/CPU0
ISIS	CLNS	-	any	0/RP0/CPU0
MCAST4	IPV4	any	any	0/RP0/CPU0
MCAST6	IPV6	any	any	0/RP0/CPU0

```
Flow Manager 0/RP0/CPU0:
total:5 tx 13 upd 1/-/1ms/tx
```

The following sample output is from the **show lpts ifib slices statistics** command:

```
RP/0/RP0/CPU0:router# show lpts ifib slices all statistics
```

Slice	L3	L4	Port	Location	Lookups	RmtDlvr	Rejects	RLDrops	NoEntry
RAWIP4	IPV4	any	any	0/0/CPU0	5	0	0	0	0
RAWIP6	IPV6	any	any	0/0/CPU0	0	0	0	0	0
OSPF4	IPV4	OSPF	any	0/0/CPU0	0	0	0	0	0
OSPF6	IPV6	OSPF	any	0/0/CPU0	0	0	0	0	0
OSPF_MC4	IPV4	any	any	0/0/CPU0	0	0	0	0	0
OSPF_MC6	IPV6	any	any	0/0/CPU0	0	0	0	0	0
BGP4	IPV4	TCP	179	0/0/CPU0	0	0	0	0	0
BGP6	IPV6	TCP	179	0/0/CPU0	0	0	0	0	0
UDP4	IPV4	UDP	any	0/0/CPU0	3704	0	979	0	0
UDP6	IPV6	UDP	any	0/0/CPU0	0	0	0	0	0
TCP4	IPV4	TCP	any	0/0/CPU0	0	0	0	0	0
TCP6	IPV6	TCP	any	0/0/CPU0	0	0	0	0	0
ISIS	CLNS	-	any	0/0/CPU0	0	0	0	0	0
MCAST4	IPV4	any	any	0/0/CPU0	0	0	0	0	0
MCAST6	IPV6	any	any	0/0/CPU0	0	0	0	0	0

Flow Manager 0/0/CPU0:  
Packets in: 3792  
Packets delivered locally without lookups: 83  
Slice lookups: 3709  
Rejects: 979

This table describes the significant fields shown in the display.

**Table 9: show lpts ifib slices statistics Command Field Descriptions**

Field	Description
Slice	Slice number.
L3-proto	Layer 3 protocol (IPv4, IPv6, CLNL).
L4-proto	Layer 4 protocol (TCP, UDP, and others).
Port	Local (destination) TCP or UDP port.
Location	Node location, in the format <i>rack/slot/module</i> .

## show lpts ifib statistics

To display Internal Forwarding Information Base (IFIB) statistics, use the **show lpts ifib statistics** command in .

```
show lpts ifib statistics [location node-id]
```

---

<b>Syntax Description</b>	<b>location node-id</b> (Optional) Displays IFIB statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
---------------------------	--

---

<b>Command Default</b>	No default behavior or values
------------------------	-------------------------------

**Command Modes****Command History**

Release	Modification
Release 6.0	This command was introduced.

**Usage Guidelines**

No specific guidelines impact the use of this command.

**Task ID**

Task ID	Operations
lpts	read

**Examples**

The following sample output is from the **show lpts ifib statistics** command:

```
RP/0/# show lpts ifib statistics

Flow Manager 0/RP0/CPU0:
  Packets in:254
  Packets delivered locally without lookups:0
  Slice lookups:254
  Post-lookup error drops:
    Failed ipv4_netio_input:1
  Rejects:254
  Packets delivered locally:0
  Packets delivered remotely:0
```

This table describes the significant fields shown in the display.

**Table 10: show lpts ifib statistics Command Field Descriptions**

Field	Description
Packets in	Packets presented to the LPTS decaps node in netio.
Packets delivered locally without lookups	Packets previously resolved on a LC delivered directly to L3.
Slice lookups	Packets requiring slice lookups.
Post-lookup error drops	Packets dropped after a slice lookup.
Rejects	Packets that caused a TCP RST or ICMP Port/Protocol Unreachable.
Packets delivered locally	Packets delivered to local applications after slice lookups.
Packets delivered remotely	Packets delivered to applications on remote RPs.

**Note**

The sample output is an example only and displays only those fields showing a value. No display exists for nonzero values. This command may show other values depending on your router configuration.

# show lpts ifib times

To display Internal Forwarding Information Base (IFIB) update transaction times, use the **show lpts ifib times** command in XR EXEC mode.

**show lpts ifib times** [**location** *node-id*]

<b>Syntax Description</b>	<b>location</b> <i>node-id</i> (Optional) Displays IFIB update transaction times for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
---------------------------	---

<b>Command Modes</b>	XR EXEC mode
----------------------	--------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 6.0	This command was introduced.

<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.
-------------------------	--

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	lpts	read

**Examples** The following sample output is from the **show lpts ifib times** command:

```
RP/0/RP0/CPU0:router# show lpts ifib times

Slice    L3    L4    Port  Location
-----  -
RAWIP4   IPV4  any   any   0/RP1/CPU0
RAWIP6   IPV6  any   any   0/RP1/CPU0
OSPF4    IPV4  OSPF  any   0/RP1/CPU0
OSPF6    IPV6  OSPF  any   0/RP1/CPU0
OSPF_MC4 IPV4  any   any   0/RP1/CPU0
OSPF_MC6 IPV6  any   any   0/RP1/CPU0
BGP4     IPV4  TCP   179   0/RP1/CPU0
BGP6     IPV6  TCP   179   0/RP1/CPU0
UDP4     IPV4  UDP   any   0/RP1/CPU0
UDP6     IPV6  UDP   any   0/RP1/CPU0
TCP4     IPV4  TCP   any   0/RP1/CPU0
TCP6     IPV6  TCP   any   0/RP1/CPU0
ISIS     CLNS  -     any   0/RP1/CPU0
MCAST4   IPV4  any   any   0/RP1/CPU0
MCAST6   IPV6  any   any   0/RP1/CPU0
Flow Manager 0/RP0/CPU0:
total:5 tx 13 upd 1/-/lms/tx
```

This table describes the significant fields shown in the display.

**Table 11: show lpts ifib times Command Field Descriptions**

Field	Description
Slice	Slice number.
L3 Protocol	Layer 3 protocol (IPv4, IPV6, CLNL).
L4 Protocol	Layer 4 protocol (TCP, UDP, and so on).
Port	Local (destination) TCP or UDP port.
Location	Node location, in the format <i>rack/slot/module</i> .

## show lpts pifib

To display Pre-Internal Forwarding Information Base (Pre-IFIB) entries, use the **show lpts pifib** command in XR EXEC mode.

**show lpts pifib** [**entry**] [**hardware** {**entry** | **police**}] [**brief**] [**location** *node-id*]

### Syntax Description

<b>entry</b>	(Optional) Pre-IFIB entry.
<b>hardware</b>	(Optional) Displays hardware for Pre-IFIB.
<b>entry</b>	(Optional) Displays the entries for Pre-IFIB.
<b>police</b>	(Optional) Displays the policer values that are being use.
<b>brief</b>	(Optional) Pre-IFIB entries in brief format.
<b>location</b> <i>node-id</i>	(Optional) The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation (for example, 0/7/CPU0).

### Command Default

By default, all entries are displayed.

### Command Modes

XR EXEC mode

### Command History

Release	Modification
Release 6.0	This command was introduced.

### Usage Guidelines

Use the **show lpts pifib** command with the **brief** keyword to perform the following functions:

- Display entries of all or part of a Pre-IFIB.

- Display a short description of each entry in the LPTS Pre-IFIB, optionally displaying packet counts for each entry.



**Note** These statistics are used only for packets that are processed by a line card, route processor, or distributed route processor.

Pre-IFIB statistics for packets processed by line card hardware are counted separately.

By default, all the defaults including the statistics for **hardware** are displayed.

Task ID	Task ID	Operations
	lpts	read

### Examples

The following is sample output for the **show lpts pifib** command:

```
RP/0/RP0/CPU0:router# show lpts pifib entry brief location 0/3/CPU0

* - Any VRF; I - Local Interest;
X - Drop; R - Reassemble;

Type          VRF-ID  L4      Interface  Deliver      Local-Address,Port Remote-Address,Port
-----
ISIS          *       -       any        0/RP0/CPU0  - -
IPv4_frag    *       any     any        R            any any
IPv4_echo    *       ICMP    any        I            any,ECHO any
IPv4         *       ICMP    any        0/RP0/CPU0  any,ECHOREPLY any
IPv4         *       ICMP    any        I            any,TSTAMP any
IPv4         *       ICMP    any        I            any,MASKREQ any
IPv4         *       TCP     any        0/RP0/CPU0  any any,179
IPv4         *       TCP     any        0/RP0/CPU0  any,179 any
IPv4         *       TCP     any        0/RP0/CPU0  any any
IPv4         *       UDP     any        0/RP0/CPU0  any,1701 any
IPv4         *       UDP     any        0/RP0/CPU0  any any
IPv4         *       OSPF    any        0/RP0/CPU0  224.0.0.5 any
IPv4         *       OSPF    any        0/RP0/CPU0  224.0.0.6 any
IPv4         *       any     any        0/RP0/CPU0  any any
IPv6_frag    *       any     any        R            any any
IPv6_echo    *       ICMP6   any        I            any,ECHOREQ any
```

The following is sample output for the **show lpts pifib type** command using the **ipv4** and **tcp** keywords.

```
RP/0/RP0/CPU0:router# show lpts pifib type ipv4 tcp

O - Opcode; F - Flow Type; L - Listener Tag; I - Local Flag; T - Min TTL;
na - Not Applicable

-----
L3 Protocol      : IPV4
L4 Protocol      : TCP
```

```

VRF-ID          : default (0x60000000)
Destination IP  : any
Source IP      : any
Port/Type      : Port:23
Source Port    : any
Is Fragment    : 0
Is SYN        : 0
Interface      : any (0x0)
O/F/L/I/T     : DELIVER/TELNET-default/IPv4_LISTENER/0/0
Deliver List   : 0/RP0

/CPU0
Accepts/Drops  : 0/0
Is Stale       : 0
-----

```

The following is sample output from the **show lpts pifib** command with the **entry** and **brief** keywords added command:

```
RP/0/RP0/CPU0:router# show lpts pifib entry brief
```

```
* - Critical Flow; I - Local Interest;
X - Drop; R - Reassemble;
```

Type	VRF-ID	Local, Remote Address	Port	L4	Interface	Deliver
ISIS	*	- -		-	any	0/0/CPU0
IPv4_frag	*	any any		any	any	R
IPv4_IXMP	*	any.ECHO any		ICMP	any	XI
IPv4_IXMP	*	any.TSTAMP any		ICMP	any	XI
IPv4_IXMP	*	any.MASKREQ any		ICMP	any	XI
IPv4_IXMP	*	any any		ICMP	any	0/0/CPU0
IPv4_IXMP	*	any any		IGMP	any	0/0/CPU0
IPv4_mcast	*	224.0.0.5 any		any	any	0/0/CPU0
IPv4_mcast	*	224.0.0.6 any		any	any	0/0/CPU0
IPv4_mcast	*	224.0.0.0/4 any		any	any	0/0/CPU0
IPv4_TCP	*	any.179 any		TCP	any	0/0/CPU0
IPv4_TCP	*	any any.179		TCP	any	0/0/CPU0
IPv4_TCP	*	any any		TCP	any	0/0/CPU0
IPv4_UDP	*	any any		UDP	any	0/0/CPU0
IPv4_IPsec	*	any any		ESP	any	0/0/CPU0
IPv4_IPsec	*	any any		AH	any	0/0/CPU0
IPv4_rawIP	*	any any		OSPF	any	0/0/CPU0
IPv4_rawIP	*	any any		any	any	0/0/CPU0
IPv6_frag	*	any any		any	any	R
IPv6_ICMP	*	any.na any		ICMP6	any	XI
IPv6_ICMP	*	any any		ICMP6	any	0/0/CPU0
IPv6_mcast	*	ff02::5 any		any	any	0/0/CPU0
IPv6_mcast	*	ff02::6 any		any	any	0/0/CPU0
IPv6_mcast	*	ff00::/8 any		any	any	0/0/CPU0
IPv6_TCP	*	any.179 any		TCP	any	0/0/CPU0
IPv6_TCP	*	any any.179		TCP	any	0/0/CPU0
IPv6_TCP	*	any any		TCP	any	0/0/CPU0
IPv6_UDP	*	any any		UDP	any	0/0/CPU0
IPv6_IPsec	*	any any		ESP	any	0/0/CPU0
IPv6_IPsec	*	any any		AH	any	0/0/CPU0
IPv6_rawIP	*	any any		OSPF	any	0/0/CPU0
IPv6_rawIP	*	any any		any	any	0/0/CPU0

The following sample output is from the **show lpts pifib** command with the **entry**, **brief**, and **entry brief statistics** keywords added:

```
RP/0/RP0/CPU0:router# show lpts pifib entry brief statistics
```

```
* - Critical Flow; I - Local Interest;
X - Drop; R - Reassemble;
```

Type	VRF-ID	Local, Remote Address.Port	L4	Interface	Accepts/Drops
ISIS	*	- -	-	any	0/0
IPv4_frag	*	any any	any	any	0/0
IPv4_IXMP	*	any.ECHO any	ICMP	any	0/0
IPv4_IXMP	*	any.TSTAMP any	ICMP	any	0/0
IPv4_IXMP	*	any.MASKREQ any	ICMP	any	0/0
IPv4_IXMP	*	any any	ICMP	any	5/0
IPv4_IXMP	*	any any	IGMP	any	0/0
IPv4_mcast	*	224.0.0.5 any	any	any	0/0
IPv4_mcast	*	224.0.0.6 any	any	any	0/0
IPv4_mcast	*	224.0.0.0/4 any	any	any	0/0
IPv4_TCP	*	any.179 any	TCP	any	0/0
IPv4_TCP	*	any any.179	TCP	any	0/0
IPv4_TCP	*	any any	TCP	any	0/0
IPv4_UDP	*	any any	UDP	any	4152/0
IPv4_IPsec	*	any any	ESP	any	0/0
IPv4_IPsec	*	any any	AH	any	0/0
IPv4_rawIP	*	any any	OSPF	any	0/0

```
statistics:
```

Type	Num. Entries	Accepts/Drops
ISIS	1	0/0
IPv4_frag	1	0/0
IPv4_IXMP	5	5/0
IPv4_mcast	3	0/0
IPv4_TCP	3	0/0
IPv4_UDP	1	4175/0
IPv4_IPsec	2	0/0
IPv4_rawIP	2	0/0
IPv6_frag	1	0/0
IPv6_ICMP	2	0/0
IPv6_mcast	3	0/0
IPv6_TCP	3	0/0
IPv6_UDP	1	0/0
IPv6_IPsec	2	0/0
IPv6_rawIP	2	0/0
Total	32	

```
Packets into Pre-IFIB: 4263
```

```
Lookups: 4263
```

```
Packets delivered locally: 4263
```

```
Packets delivered remotely: 0
```

This table describes the significant fields shown in the display for the **show lpts pifib** command with the **brief** and **statistics** keywords .

**Table 12: show lpts pifib Command Field Descriptions**

Field	Description
Type	Hardware entry type.
VRF ID	VPN routing and forwarding (VRF) identification (vrfid) number.
Local, Remote Address. Port	Indicates local address (in the form of local port and type) and remote address (remote port).
L4	Layer 4 protocol of the entry.
Interface	Interface for this entry.
Accepts/Drops	Number of packets sent to DestAddr/Number of packets dropped due to policing.
Num. Entries	Number of pre-ifib entries of the listed type.
Packets into Pre-IFIB	Packets presented for pre-IFIB lookups.
Lookups	Packets looked up.
Packets delivered locally	Packets delivered to local applications or the local stack ( <i>n</i> duplicated) packets duplicated for delivery to applications and the local stack.
Packets delivered remotely	Packets delivered to applications or for lookup on other RPs.

## show lpts pifib hardware entry

To display entries in the Local Packet Transport Services (LPTS) pre-IFIB hardware table, use the **show lpts pifib hardware entry** command in XR EXEC mode.

```
show lpts pifib hardware entry [{brief}] [location {allnode_id}]
```

<b>Syntax Description</b>	<b>brief</b>	(Optional) Displays summary hardware entry information.
	<b>location all</b>	(Optional) Specifies all locations.
	<b>location node-id</b>	(Optional) Displays 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.
<b>Command Default</b>	Displays hardware entry information in brief.	
<b>Command Modes</b>	XR EXEC mode	

## show lpts pifib hardware entry

Command History	Release	Modification
	Release 6.0	This command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	lpts	read

**Examples**

The following sample output is from the **show lpts pifib hardware entry** command with the **location** keyword:

```
RP/0/RP0/CPU0:router# show lpts pifib hardware entry brief location 0/3/CPU0
```

```
* - Read on clear stats
```

```
-----
DestIP      L4Proto  port/Type      remotePort  npu  ListenerTag
Flowtype    DestNode  Accepted*  Dropped*
-----
0.0.0.0      0         any           0           0    IPv4_REASS
Fragment     Local LC    0           0           0
0.0.0.0      1         ICMP_Dflt    0           0    RAWIP4_FM
ICMP-default Local LC    0           0           0
224.0.0.5    89        any           0           0    IPv4_STACK
OSPF-mc-default Deliver RP  72          0           0
224.0.0.6    89        any           0           0    IPv4_STACK
OSPF-mc-default Deliver RP  0           0           0
0.0.0.0      89        any           0           0    OSPF4_FM
OSPF-uc-default Deliver RP  30          0           0
0.0.0.0      6         Port:179     0           0    BGP4_FM
BGP-default  Local LC    0           0           0
0.0.0.0      6         Port:any     179         0    BGP4_FM
BGP-default  Local LC    25          0           0
0.0.0.0      6         Port:any     0           0    TCP4_FM
TCP-default  Local LC    0           0           0
0.0.0.0      17        Port:any     0           0    UDP4_FM
UDP-default  Local LC    67          0           0
0.0.0.0      46        any           0           0    RAWIP4_FM
RSVP-default Local LC    0           0           0
0.0.0.0      0         any           0           0    RAWIP4_FM
Raw-default  Local LC    0           0           0
::           0         any           0           0    IPv6_REASS
Fragment     Local LC    0           0           0
::           58        ICMP6_LL     0           0    RAWIP6_FM
ICMP-default Local LC    10          0           0
::           58        ICMP6_MD     0           0    RAWIP6_FM
ICMP-default Local LC    3           0           0
::           58        ICMP6_Dflt   0           0    RAWIP6_FM
ICMP-default Local LC    4           0           0
0:2ff::500:0 89        any           0           0    IPv6_STACK
OSPF-mc-default Deliver RP  76          0           0
0:2ff::600:0 89        any           0           0    IPv6_STACK
OSPF-mc-default Deliver RP  0           0           0
```

```

::                89          any                0          0          0          OSPF6_FM
OSPF-uc-default  Deliver RP          44          0          0
::                6          Port:179                0          0          0          BGP6_FM
BGP-default     Local LC             16          0          0
::                6          Port:any                179         0          0          BGP6_FM
BGP-default     Local LC             16          0          0
::                6          Port:any                0          0          0          TCP6_FM
TCP-default     Local LC             0          0          0
::                17         Port:any                0          0          0          UDP6_FM
UDP-default     Local LC             0          0          0
::                0          any                    0          0          0          RAWIP6_FM
Raw-default     Local LC             0          0          0
any             ISIS_Dflt            0          0          0          CLNS_STACK
ISIS-default   Deliver RP          56          0          0
any             ISIS_Jumbo           0          0          0          CLNS_STACK
ISIS-default   Deliver RP          0          0          0

```

This table describes the significant fields shown in the display.

**Table 13: show lpts pifib hardware entry Command Field Descriptions**

Field	Description
DestIP	IP address of the destination node.
L4 Protocol	Layer 4 protocol of the entry.
Port/Type	Port or type for this entry.
remotePort	Remote port for this entry.
npu	Network Processor Unit.
ListenerTag	Name of the listener node.
Flowtype	Type of the LPTS flow.
DestNode	Destination node to which to send the packet.
Accepted/Dropped	Number of packets sent to DestAddr/Number of packets dropped due to policing.

## show lpts pifib hardware police

To display the policer configuration value set, use the **show lpts pifib hardware police** command in XR EXEC mode.

```
show lpts pifib hardware police [location {allnode-id}]
```

### Syntax Description

**location** *node-id* (Optional) Displays pre-Internal Forwarding Information Base (IFIB) information for the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.

## show lpts pifib hardware police

---

all Specifies all locations.

---

**Command Default** If no policer is configured, the default value is the configured rate.

**Command Modes** XR EXEC mode

**Command History**

Release	Modification
Release 6.0	This command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

**Task ID**

Task ID	Operations
lpts	read

**Examples**

This sample output is from the **show lpts pifib hardware police** command with the **location** keyword for 0/3/CPU0:

```
RP/0/RP0/CPU0:router#show lpts pifib hardware police location 0/3/CPU0
```

```
-----
                        Node 0/3/CPU0:
-----
Burst = 100ms for all flow types
-----
FlowType                Policer Type    Cur. Rate  Burst    npu
-----
Fragment                32102   np         1000     100      0
OSPF-mc-default         32104   np         3500     1000     0
OSPF-uc-default         32106   np         3000     1000     0
ISIS-default            32108   np         3500     1000     0
BGP-default             32118   np         4000     1250     0
ICMP-default            32126   np        10000     100      0
LDP-TCP-default         32130   np         4000     2000     0
LDP-UDP                 32131   np         2000     1000     0
RSVP-default            32138   np        14500     700      0
UDP-default             32163   np        25500     100      0
TCP-default             32167   np        25500     100      0
Raw-default             32171   np         500      100      0
TPA                     32196   np        10000     6000     0
```

This table describes the significant fields shown in the display.

**Table 14: show lpts pifib hardware police Command Field Descriptions**

Field	Description
FlowType	Type of flow that is binding between a tuple and a destination.

Field	Description
Policer	Policer Values in PPS.
Type	Type of LPTS entry.
Cur. Rate	Packet rate set for the entry.
Burst	Acceptable burst size for the policer.
npu	Network Processor Unit.

## show lpts pifib statistics

To display Pre-Internal Forwarding Information Base (Pre-IFIB) statistics, use the **show lpts ifib statistics** command in XR EXEC mode.

**show lpts pifib statistics** [**location** *node-id*]

---

**Syntax Description**      **location** *node-id* (Optional) Displays Pre-IFIB statistics for the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.

---



---

**Command Default**      No default behavior or values

---

**Command Modes**      XR EXEC mode

---

Command History	Release	Modification
	Release 6.0	This command was introduced.

---



---

**Usage Guidelines**      No specific guidelines impact the use of this command.

---

Task ID	Task ID	Operations
	lpts	read

---



---

**Examples**      The following sample output is from the **show lpts pifib statistics** command:

```
RP/0/RP0/CPU0:router# show lpts pifib statistics

Packets into Pre-IFIB:80
Lookups:80
Packets delivered locally:80
Packets delivered remotely:0
```

This table describes the significant fields shown in the display.

**Table 15: show lpts pifib statistics Command Field Descriptions**

Field	Description
Packets into Pre-IFIB	Packets presented for pre-IFIB lookups.
Lookups	Packets looked up.
Packets delivered locally	Packets delivered to local applications or the local stack ( <i>n</i> duplicated) packets duplicated for delivery to applications and the local stack.
Packets delivered remotely	Packets delivered to applications or for lookup on other RPs.

## show lpts port-arbitrator statistics

To display local packet transport services (LPTS) port arbitrator statistics, use the **show lpts port-arbitrator statistics** command in XR EXEC mode.

**show lpts port-arbitrator statistics**

**Syntax Description** This command has no keywords or arguments.

**Command Default** No default behavior or values

**Command Modes** XR EXEC mode

Command History	Release	Modification
	Release 6.0	This command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	lpts	read

**Examples** The following sample output is from the **show lpts port-arbitrator statistics** command:

```
RP/0/RP0/CPU0:router# show lpts port-arbitrator statistics
```

```
LPTS Port Arbitrator statistics:
PA FGID-DB library statistics:
  0 FGIDs in use, 512 cached, 0 pending retries
  0 free allocation slots, 0 internal errors, 0 retry attempts
  1 FGID-DB notify callback, 0 FGID-DB errors returned
```

```

FGID-DB permit mask: 0x7 (alloc mark rack0)
PA API calls:
    1 init                1 realloc_done
    8 alloc               8 free
    16 join              16 leave
    8 detach
FGID-DB API calls:
    1 register           1 clear_old
    1 alloc              0 free
    16 join              16 leave
    0 mark                1 mark_done

```

## show lpts vrf

To display the Local Packet Transport Services (LPTS) VPN routing and forwarding (VRF) instance identification numbers and names, use the **show lpts vrf** command in XR EXEC mode.

### show lpts vrf

**Syntax Description** This command has no keywords or arguments.

**Command Default** No default behavior or values

**Command Modes** XR EXEC mode

Command History	Release	Modification
	Release 6.0	This command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	lpts	read

### Examples

The following sample output is from the **show lpts vrf** command:

```

RP/0/RP0/CPU0:router# show lpts vrf

VRF-ID      VRF-NAME
0x00000000  *
0x60000000  default

```

This table describes the significant fields shown in the display.

**Table 16: show lpts vrf Command Field Descriptions**

<b>Field</b>	<b>Description</b>
VRF-ID	VPN routing and forwarding (VRF) identification (vrfid) number.
VRF-NAME	Name given to the VRF.