

# Chapter 17

## LDP Monitoring and Troubleshooting

Table 58 summarizes the command line interface (CLI) commands you can use to monitor the LDP. In the table, the commands are grouped by functionality. In the remainder of this chapter, they are explained alphabetically.

**Table 58: Commands for Monitoring LDP**

Task or Information to Monitor	Command
Entries in the LDP database.	show ldp database on page 516
Status of interfaces on which LDP is running.	show ldp interface on page 519
LDP neighbor.	show ldp neighbor on page 520
Clear LDP neighbors.	clear ldp neighbor on page 515
Configured named paths that are used by LDP.	show ldp path on page 521
LDP routing table entries.	show ldp route on page 522
Currently active LDP sessions.	show ldp session on page 524
LDP statistics.	show ldp statistics on page 526
Clear LDP statistics.	clear ldp statistics on page 515

### clear ldp neighbor

**Syntax** clear ldp neighbor <address>

**Description** Tear down neighbor connections.

**Options** none—Tear down connections with all LDP neighbors.  
address—Tear down the connection with the specified neighbor.

**Required Privilege Level** clear

### clear ldp statistics

**Syntax** clear ldp statistics

**Description** Zero all LDP statistics.

**Required Privilege Level** clear

## show ldp database

**Syntax** show ldp database <brief | detail | extensive>

**Description** Display entries in the LDP label database.

**Options** none—Display all entries in the LDP database.

brief—(Optional) Display brief information about entries in the LDP database.

detail—(Optional) Display detailed information about the entries in the LDP database.

extensive—(Optional) Display extensive information about the entries in the LDP database.  
The output of the extensive option contains information that is of use to Customer Support personnel only.

**Default:** brief

**Required Privilege Level** view

**Sample Output** Sample Output: show ldp database brief on page 518  
Sample Output: show ldp database detail on page 518

**Options at a Glance** Table 59 summarizes which information is included in the output of each of the show ldp database commands. In this table, output fields are listed in alphabetical order. In the Output Fields section, the output fields are listed in the order in which they are displayed.

**Table 59: Show LDP Database Output Fields Summary**

Options	Field Description
All	Input label database—Label received from the other router.
All	Label—Label binding to a route prefix.
All	Output label database—Label advertised to the other router.
All	Prefix—Route prefix.
All	<i>session-identifier</i> —Session identifier, which comprises the local and remote label space identifiers.
Detail	State—State of the label binding. It can be Active, New, MapRcv, MapSend, RelRcv, RelRsnd, RelSend, ReqSend, or W/dSend

**Output Fields** Input label database—Label received from the other router.

Output label database—Label advertised to the other router.

*session-identifier*—Session identifier, which comprises the local and remote label space identifiers.

Label—Label binding to a route prefix.

Prefix—Route prefix.

State—(Detail output only) State of the label binding:

Active—Label binding has been installed and distributed appropriately. A label binding is almost always in this state.

New—New label that has not yet been distributed.

MapRcv—Waiting to receive a label mapping message.

MapSend—Waiting to send a label mapping message.

RelRcv—Waiting to receive a label release message.

RelRsnd—Waiting to receive a label release message before resending label mapping message.

RelSend—Waiting to send a label release message.

ReqSend—Waiting to send a label request message.

W/dSend—Waiting to send a label withdrawal message.

**Sample Output: show ldp database brief**

```

user@host> show ldp database brief

Input label database, 10.10.255.6:0-10.10.255.2:0
  Label      Prefix
   3         *10.10.255.2/32
 100001     *10.10.255.3/32
 100002     *10.10.255.4/32

Output label database, 10.10.255.6:0-10.10.255.2:0
  Label      Prefix
   3         *10.10.255.6/32
 100000     *10.10.255.4/32
 100003     *10.10.255.3/32

Input label database, 10.10.255.6:0-10.10.255.4:0
  Label      Prefix
 100041     *10.10.255.2/32
 100037     *10.10.255.3/32
   3         *10.10.255.4/32

Output label database, 10.10.255.6:0-10.10.255.4:0
  Label      Prefix
   3         *10.10.255.6/32
 100001     *10.10.255.2/32

```

**Sample Output: show ldp database detail**

```

user@host> show ldp database detail

Input label database, 10.10.255.6:0-10.10.255.2:0
  Label      Prefix
   3         *10.10.255.2/32
                State: Active
 100001     *10.10.255.3/32
                State: Active
 100002     *10.10.255.4/32
                State: Active

Output label database, 10.10.255.6:0-10.10.255.2:0
  Label      Prefix
   3         *10.10.255.6/32
                State: Active
 100000     *10.10.255.4/32
                State: Active
 100003     *10.10.255.3/32
                State: Active

Input label database, 10.10.255.6:0-10.10.255.4:0
  Label      Prefix
 100041     *10.10.255.2/32
                State: Active
 100037     *10.10.255.3/32
                State: Active
   3         *10.10.255.4/32
                State: Active

Output label database, 10.10.255.6:0-10.10.255.4:0
  Label      Prefix
   3         *10.10.255.6/32
                State: Active
 100001     *10.10.255.2/32
                State: Active

```

## show ldp interface

**Syntax** show interface <brief | detail | extensive>

**Description** Display the status of each interface on which LDP is enabled.

**Options** none—Display all interfaces in the LDP database.

brief—(Optional) Display brief interface information.

detail—(Optional) Display detailed interface information.

extensive—(Optional) Display extensive interface information. The output of the extensive option contains information that is of use to Customer Support personnel only.

**Default:** brief

**Required Privilege Level** view

**Sample Output** Sample Output: show ldp interface brief on page 519  
Sample Output: show ldp interface detail on page 519

**Output Fields** Interface—Interface name.

Label space ID—Label space identifier that the router is advertising on the interface.

Nbr count—Number of neighbors on the interface.

Next hello—How long until the next hello packet is sent on this interface, in seconds.

Hello interval—(Detail output only) Configured hello interval, in seconds.

Hold time—(Detail output only) Configured hold time, in seconds.

**Sample Output: show ldp interface brief**

```
user@host> show ldp interface brief
Interface          Label space ID      Nbr count  Next hello
fxp0.0             10.10.255.6:0       2           3
mps0.0             10.10.255.6:0       0           0
```

**Sample Output: show ldp interface detail**

```
user@host> show ldp interface detail
Interface          Label space ID      Nbr count  Next hello
fxp0.0             10.10.255.6:0       2           1
  Hello interval: 5, Hold time: 15
mps0.0             10.10.255.6:0       0           3
  Hello interval: 5, Hold time: 15
```

## show ldp neighbor

**Syntax** show ldp neighbor <brief | detail | extensive>

**Description** Display a list of LDP neighbors.

**Options** brief—(Optional) Display brief neighbor information.

detail—(Optional) Display detailed neighbor information.

extensive—(Optional) Display extensive neighbor information. The output of the extensive option contains information that is of use to Customer Support personnel only.

**Default:** brief

**Required Privilege Level** view

**Sample Output** Sample Output: show ldp neighbor brief on page 520  
Sample Output: show ldp neighbor detail on page 520

**Output Fields** Address—IP address of the neighbor.

Interface—Interface over which the neighbor was discovered.

Label space ID—Label space identifier advertised by the neighbor.

Hold time—Remaining hold time before the neighbor expires, in seconds.

Transport address—(Detail output only) Address to which the neighbor wants the local route to establish the LDP session.

Configuration sequence—(Detail output only) Counter that is incremented whenever the neighbor changes its configuration.

**Sample Output: show ldp neighbor brief**

```
user@host> show ldp neighbor brief
Address          Interface      Label space ID  Hold Time
192.168.1.213   so-0/0/0      10.10.255.4:0   13
192.168.1.211   so-0/0/0      10.10.255.2:0   14
```

**Sample Output: show ldp neighbor detail**

```
user@host> show ldp neighbor detail
Address          Interface      Label space ID  Hold Time
192.168.1.213   so-0/0/0      10.10.255.4:0   10
  Transport address: 10.10.255.4, Configuration sequence: 3
192.168.1.211   s0-0/0/0      10.10.255.2:0   11
  Transport address: 10.10.255.2, Configuration sequence: 1
```

## show ldp path

<b>Syntax</b>	show ldp path <brief   detail   extensive>
<b>Description</b>	Display the LSPs that LDP created.
<b>Options</b>	<p>none— Display all LSPs.</p> <p>brief—(Optional) Display brief information about the LSPs on this router.</p> <p>detail—(Optional) Display detailed information about the LSPs on this router.</p> <p>extensive—(Optional) Display extensive information about the LSPs on this router. The output of the extensive option contains information that is of use to Customer Support personnel only.</p> <p><b>Default:</b> brief</p>
<b>Required Privilege Level</b>	view
<b>Sample Output</b>	<p>Sample Output: show ldp path brief on page 521</p> <p>Sample Output: show ldp path detail on page 522</p>
<b>Output Fields</b>	<p>Output Session (label)—Session ID and labels that this system has sent using LDP. These correspond to MPLS packets received.</p> <p>Input Session (label)—Session ID and labels that this system has received using LDP. These correspond to MPLS packets transmitted.</p> <p>route—Each line in the output corresponds to an MPLS route. For example, the fourth line shows that any MPLS packet received from 10.10.255.6 with label 100000 will be transmitted to 10.10.255.3 with label 3.</p> <p>Attached route—(Detail output only) Route corresponding to the LSP.</p> <p>Ingress route—(Detail output only) Indicates that the router acts as the ingress for the LSP.</p>
<b>Sample Output: show ldp path brief</b>	<pre> user@host&gt; show ldp path brief Output Session (label)      Input Session (label) 10.10.255.6:0(3)           (egress) 10.10.255.3:0(3)           . 10.10.255.4:0(3)           . 10.10.255.6:0(100000)      10.10.255.3:0(3) 10.10.255.4:0(100000)      . 10.10.255.3:0(100001)      10.10.255.6:0(3) 10.10.255.4:0(100001)      . 10.10.255.6:0(100002)      10.10.255.4:0(3) 10.10.255.3:0(100002)      . </pre>

**Sample Output: show ldp path detail**

```

user@host> show ldp path detail
Output Session (label)      Input Session (label)
10.10.255.6:0(3)           (egress)
10.10.255.3:0(3)           .
10.10.255.4:0(3)           .
    Attached route: *10.10.255.2/32
10.10.255.6:0(100000)      10.10.255.3:0(3)
10.10.255.4:0(100000)      .
    Attached route: *10.10.255.3/32, Ingress route
10.10.255.3:0(100001)      10.10.255.6:0(3)
10.10.255.4:0(100001)      .
    Attached route: *10.10.255.6/32, Ingress route
10.10.255.6:0(100002)      10.10.255.4:0(3)
10.10.255.3:0(100002)      .
    Attached route: *10.10.255.4/32, Ingress route

```

## show ldp route

**Syntax** show ldp route <brief | detail | extensive>

**Description** Display the entries in the LDP routing table. These are the unicast routes that LDP is considering for binding to LSPs. This routing table is a subset of the unicast routing table, inet.0.

**Options** brief—(Optional) Display brief information about the entries in the LDP routing table.  
 detail—(Optional) Display detailed information about the entries in the LDP routing table.  
 extensive—(Optional) Display extensive information about the entries in the LDP routing table. The output of the extensive option contains information that is of use to Customer Support personnel only.

**Default:** brief

**Required Privilege Level** view

**Sample Output** Sample Output: show ldp route brief on page 523  
 Sample Output: show ldp route detail on page 523

**Output Fields** Destination—Destination prefix.  
 Next-hop intf—Interface that is the next hop to the destination prefix.  
 Next-hop address—IP address of the next hop.  
 Bound to outgoing label—(Detail output only) Indicates the route has been bound to LSPs with the label being distributed for that LSP.

**Sample Output: show ldp route brief**

```

user@host>show ldp route brief
Destination      Next-hop intf  Next-hop address
10.10.255.1/32   so-2/3/0
*10.10.255.3/32  so-1/0/0       10.10.1.3
*10.10.255.1/32  so-2/3/0
10.10.255.4/32   so-0/0/0       192.168.1.213
*10.10.255.4/32  so-0/0/0       192.168.1.213
10.10.255.6/32   so-0/0/0       192.168.1.215
*10.10.255.6/32  so-0/0/0       192.168.1.215
*10.10.255.2/32
0.0.0.0/0        so-0/0/0       192.168.1.254
10.10.255.3/32   so-1/0/0       10.10.1.3

```

**Sample Output: show ldp route detail**

```

user@host> show ldp route detail
Destination      Next-hop intf  Next-hop address
10.10.255.1/32   so-2/3/0
*10.10.255.3/32  so-1/0/0       10.10.1.3
  Bound to outgoing label 100001
*10.10.255.1/32  so-2/3/0
10.10.255.4/32   so-0/0/0       192.168.1.213
*10.10.255.4/32  so-0/0/0       192.168.1.213
  Bound to outgoing label 100002
10.10.255.6/32   so-0/0/0       192.168.1.215
*10.10.255.6/32  so-0/0/0       192.168.1.215
  Bound to outgoing label 100000
*10.10.255.2/32
  Bound to outgoing label 3
0.0.0.0/0        so-0/0/0       192.168.1.254
10.10.255.3/32   so-1/0/0       10.10.1.3

```

## show ldp session

**Syntax** show ldp session <brief | detail | extensive>

**Description** Display information about LDP sessions.

**Options** none— Display all LSP sessions.

brief—(Optional) Display brief LDP session information.

detail—(Optional) Display detailed LDP session information.

extensive—(Optional) Display extensive LDP session information. The output of the extensive option contains information that is of use to Customer Support personnel only.

**Default:** brief

**Required Privilege Level** view

**Sample Output** Sample Output: show ldp session brief on page 525  
Sample Output: show ldp session detail on page 525

**Output Fields** Address—Transport address of the session.

State—State of the session. It can be Nonexistent, Connecting, Initialized, OpenRec, OpenSent, Operational, or Closing, which correspond to the state diagram specified in the LDP functional specification Internet draft.

Connection—TCP connection state. It can be Closed, Opening, or Open.

Hold time—Remaining hold time before the session will be closed, in seconds.

Session ID—(Detail output only) Label space identifier of the session.

Next keepalive—(Detail output only) Time until next keepalive is sent, in seconds.

Active—(Detail output only) Whether the local router is playing the active role in the session.

Maximum PDU—(Detail output only) Maximum PDU size for the session.

Hold time—(Detail output only) Session hold time, in seconds.

Neighbor count—(Detail output only) Number of neighbors that are contributing to the session.

Keepalive interval—(Detail output only) Keepalive interval, in seconds.

Connect retry interval—(Detail output only) TCP connection retry interval, in seconds.

Local address—(Detail output only) Local transport address.

Remote address—(Detail output only) Remote transport address.

Next-hop addresses received—(Detail output only) Next-hop addresses received on the session.

**Sample Output: show ldp session brief**

```

user@host> show ldp session brief
  Address          State      Connection  Hold Time
  10.10.255.2      Operational Open         25
  10.10.255.4      Operational Open         26

```

**Sample Output: show ldp session detail**

```

user@host> show ldp session detail

Address: 10.10.255.2, State: Operational, Connection: Open, Hold time: 23
Session ID: 10.10.255.6:0--10.10.255.2:0
Next keepalive in 4 seconds
Active, Maximum PDU: 4096, Hold time: 30, Neighbor count: 1
Keepalive interval: 10, Connect retry interval: 10
Local address: 10.10.255.6, Remote address: 10.10.255.2
Next-hop addresses received:
  10.10.1.2
  10.10.255.2
  192.168.1.211

Address: 10.10.255.4, State: Operational, Connection: Open, Hold time: 24
Session ID: 10.10.255.6:0--10.10.255.4:0
Next keepalive in 9 seconds
Active, Maximum PDU: 4096, Hold time: 30, Neighbor count: 1
Keepalive interval: 10, Connect retry interval: 10
Local address: 10.10.255.6, Remote address: 10.10.255.4
Next-hop addresses received:
  10.10.1.4
  10.10.255.4
  192.168.1.213

```

show ldp statistics

**Syntax** show ldp statistics

**Description** Display LDP statistics.

**Required Privilege Level** view

**Output Fields** Message type—LDP message types.

Total Sent, Received—Total number of each message type sent and received.

Last 5 seconds Sent, Received—Number of each message type send and received in the last 5 seconds.

Event type—LDP events and errors.

Total—Total number of each event or error.

Last 5 seconds—Number of each event or error in the last 5 seconds.

**Sample Output** user@host> show ldp statistics

Message type	Total		Last 5 seconds	
	Sent	Received	Sent	Received
Hello	265	263	2	2
Initialization	2	2	0	0
Keepalive	112	111	1	0
Notification	0	0	0	0
Address	2	2	0	0
Address withdraw	0	0	0	0
Label mapping	7	6	0	0
Label request	0	0	0	0
Label withdraw	2	0	0	0
Label release	0	2	0	0
Label abort	0	0	0	0
All UDP	265	263	2	2
All TCP	123	121	1	0

Event type	Total	Last 5 seconds	
		Sent	Received
Sessions opened	2	0	0
Sessions closed	0	0	0
Topology changes	11	0	0
No interface	0	0	0
No session	0	0	0
No adjacency	0	0	0
Unknown version	0	0	0
Malformed PDU	0	0	0
Malformed message	0	0	0
Unknown message type	0	0	0
Inappropriate message	0	0	0
Malformed TLV	0	0	0
Bad TLV value	0	0	0
Missing TLV	0	0	0
PDU too large	0	0	0