

Chapter 21

LDP Operational Mode Commands

Table 51 summarizes the command-line interface (CLI) commands you can use to monitor Label Distribution Protocol (LDP). In the table, the commands are grouped by functionality. In the remainder of this chapter, they are explained alphabetically.

Table 51: Commands for Monitoring LDP

Task or Information to Monitor	Command
Entries in the LDP database	show ldp database on page 601
Status of interfaces on which LDP is running	show ldp interface on page 605
LDP neighbor	show ldp neighbor on page 606
Clear LDP neighbors	clear ldp neighbor on page 599
Configured named paths that are used by LDP	show ldp path on page 607
LDP routing table entries	show ldp route on page 609
Currently active LDP sessions	show ldp session on page 611
LDP statistics	show ldp statistics on page 614
Clear LDP statistics	clear ldp statistics on page 600

clear ldp neighbor

Syntax	clear ldp neighbor <address>
Description	Tear down LDP neighbor connections.
Options	none—Tear down connections with all LDP neighbors. address—(Optional) 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> <inet l2circuit> <instance <i>instance-name</i> > <session <i>session</i> >
Description	Display entries in the LDP label database.
Options	<p>none—Same as brief.</p> <p>brief—(Optional) Display brief information about entries in the LDP database.</p> <p>detail—(Optional) Display detailed information about the entries in the LDP database.</p> <p>extensive—(Optional) Display extensive information about the entries in the LDP database. The output of the extensive option contains information for Juniper Networks Customer Support personnel only.</p> <p>inet—(Optional) Display only inet bindings.</p> <p>l2circuit—(Optional) Display only Layer 2 circuit bindings.</p> <p>instance <i>instance-name</i>—(Optional) Display routing instance information for the specified instance. If <i>instance-name</i> is omitted, then the master instance is assumed.</p> <p>session <i>session</i>—(Optional) Display database for this particular session. If <i>session</i> is not specified, then all sessions are displayed. <i>session</i> is the destination address of the LDP session.</p>
Required Privilege Level	view
Sample Output	<p>Sample Output: show ldp database brief on page 603</p> <p>Sample Output: show ldp database l2circuit detail on page 604</p>
Options at a Glance	Table 52 summarizes the information included in the output of each show ldp database command option. 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 52: Show LDP Database Output Field Summary (Alphabetical Order)

Options	Field Description
Detail	Age—Time elapsed since the binding was created, in the format <i>w:d:hh:mm:ss</i> .
Detail	Cell bundle size—Maximum number of cells that the Layer 2 circuit can receive in a packet. Displayed for ATM cell encapsulations only.
All	<i>control word status</i> —Displays whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord.
All	Input label database—Label received from the other router.
All	Label—Label binding to a route prefix.
Detail	MTU—MTU of the Layer 2 circuit. MTU is displayed for all encapsulation types except ATM cell encapsulations.

Options	Field Description
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
All	VC number—Virtual circuit number. It can have any numeric value.

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 includes the local and remote label space identifiers.

Label—Label binding to a route prefix.

Prefix—Route prefix. It can be either the IP prefix or the Layer 2 encapsulation type in the format *L2CKT control word status encapsulation type VC number*, for example, L2CKT CtlWord FRAME RELAY VC 2.

control word status—Displays whether the use of the control word has been negotiated for this virtual circuit:

NoCtrlWord

CtrlWord

encapsulation type—The encapsulation type:

FRAME RELAY

ATM AAL5

ATM CELL

VLAN

ETHERNET

CISCO_HDLC

PPP

VC number—Virtual circuit number. It can have any numeric value.

(Stale)—When you display the LDP database for the neighbor of a restarting router, the bindings learned from the restarting neighbor are displayed as (Stale). Stale bindings are deleted if they are not refreshed within the recovery time.

Prefix
10.255.245.221/32 (Stale)

MTU—(Detail output only) MTU of the Layer 2 circuit. MTU is displayed for all encapsulation types except ATM cell encapsulations.

Requested VLAN ID—(Detail output only) VLAN identifier of the Layer 2 circuit.

Cell bundle size—(Detail output only) Maximum number of cells that the Layer 2 circuit can receive in a packet. Displayed for ATM cell encapsulations only.

State—(Detail output only) State of the label binding. It can be:

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.

Age—(Detail output only) Time elapsed since the binding was created, in the format *w:d:hh:mm:ss*.

Scheduled for deletion in *xx* seconds—(Displayed for output label database only) Indicates the label and the associated prefix is pending deletion in this amount of time.

**Sample Output: show
ldp database brief**

```
user@host> show ldp database brief
Input label database, 10.255.245.222:0--10.255.245.221:0
Label Prefix
  3 10.255.245.221/32 (Stale)
100018 10.255.245.222/32
100011 L2CKT FRAME RELAY VC 11

Output label database, 10.255.245.222:0--10.255.245.221:0
Label Prefix
  3 10.255.245.221/32
100018 10.255.245.222/32

100011 L2CKT FRAME RELAY VC 1
```

**Sample Output: show
ldp database l2circuit
detail**

```

user@host> show ldp database l2circuit detail
Input label database, 10.255.245.44:0--10.255.245.45:0
  Label Prefix
  100176 L2CKT CtrlWord ATM CELL (VC Mode) VC 100
        Cell bundle size: 80
        State: Active
        Age: 9:48
  100256 L2CKT CtrlWord FRAME RELAY VC 101
        MTU: 4470
        State: Active
        Age: 9:48

Output label database, 10.255.245.44:0--10.255.245.45:0
  Label Prefix
  100048 L2CKT CtrlWord ATM CELL (VC Mode) VC 100
        Cell bundle size: 80
        State: Active
        Age: 9:48
  100112 L2CKT CtrlWord FRAME RELAY VC 101
        MTU: 4470
        State: Active
        Age: 9:48

```

**Sample Output: show
ldp database session**

```

user@host> show ldp database session 10.1.1.195
Input label database, 10.0.0.194:0--10.1.1.195:0
  Label Prefix
  100002 10.255.245.197/32
  100003 10.255.245.196/32
  100004 10.0.0.194/32
    3 10.1.1.195/32
  100000 L2CKT NoCtrlWord FRAME RELAY VC 1
  100001 L2CKT CtrlWord FRAME RELAY VC 2

Output label database, 10.0.0.194:0--10.1.1.195:0
  Label Prefix
  100003 10.255.245.197/32
  100004 10.1.1.195/32
  100002 10.255.245.196/32
    3 10.0.0.194/32
  100000 L2CKT CtrlWord FRAME RELAY VC 2
  100001 L2CKT NoCtrlWord FRAME RELAY VC 1

```

show ldp interface

Syntax show interface <brief | detail | extensive> <instance *instance-name*>

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

Options none—Same as brief.

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 for Juniper Networks Customer Support personnel only.

instance *instance-name*—(Optional) Display routing instance information for the specified instance. If *instance-name* is omitted, then the master instance is assumed.

Required Privilege Level view

Sample Output Sample Output: show ldp interface brief on page 605
Sample Output: show ldp interface detail on page 605

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> <instance *instance-name*>

Description Display a list of LDP neighbors.

Options none—Same as brief.

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 for Juniper Networks Customer Support personnel only.

instance *instance-name*—(Optional) Display routing instance information for the specified instance. If *instance-name* is omitted, then the master instance is assumed.

Required Privilege Level view

Sample Output Sample Output: show ldp neighbor brief on page 606
Sample Output: show ldp neighbor detail on page 606

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 increments 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 so-0/0/0     10.10.255.2:0   11
Transport address: 10.10.255.2, Configuration sequence: 1
```

show ldp path

Syntax	show ldp path <detail extensive> <destination> <instance <i>instance-name</i> >
Description	Display the LSPs that the LDP created.
Options	<p>none—Same as brief.</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 for Juniper Networks Customer Support personnel only.</p> <p>destination—(Optional) Restrict the output to entries that match the specified destination prefix.</p> <p>instance <i>instance-name</i>—(Optional) Display routing instance information for the specified instance. If <i>instance-name</i> is omitted, then the master instance is assumed.</p>
Required Privilege Level	view
Sample Output	Sample Output: show ldp path extensive on page 608
Output Fields	<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><i>route</i>—Each line in the output corresponds to an MPLS route.</p> <p>Attached route—Route corresponding to the LSP.</p> <p>Ingress route—Indicates that the router acts as the ingress for the LSP.</p>

Sample Output: show ldp path

```

user@host> show ldp path
Output Session (label)   Input Session (label)
10.255.14.220:0(3)      ( )
  Attached route: 10.255.14.221/32
10.255.14.220:0(100000) 10.255.14.220:0(3)
  Attached route: 10.255.14.220/32, Ingress route
10.255.14.220:0(100001) 10.255.14.220:0(100001)
  Attached route: 10.255.14.214/32, Ingress route

```

Sample Output: show ldp path detail

```

user@host> show ldp path detail
Output Session (label)   Input Session (label)
10.255.14.220:0(3)      ( )
  Attached route: 10.255.14.221/32
10.255.14.220:0(100000) 10.255.14.220:0(3)
  Attached route: 10.255.14.220/32, Ingress route
10.255.14.220:0(100001) 10.255.14.220:0(100001)
  Attached route: 10.255.14.214/32, Ingress route

```

**Sample Output: show
ldp path extensive**

```
user@host> show ldp path extensive
Output Session (label)    Input Session (label)
10.255.14.220:0(3)       ( )
  Attached route: 10.255.14.221/32
  Reference count: 3, Global label: 3
10.255.14.220:0(100000)   10.255.14.220:0(3)
  Attached route: 10.255.14.220/32, Ingress route
  Reference count: 2, Transit route, Global label: 100000
10.255.14.220:0(100001)   10.255.14.220:0(100001)
  Attached route: 10.255.14.214/32, Ingress route
  Reference count: 2, Transit route, Global label: 100001
```

**Sample Output: show
ldp path extensive
(destination)**

```
user@host> show ldp path extensive 10.255.14.214/32
Output Session (label)    Input Session (label)
10.255.14.220:0(100001)   10.255.14.220:0(100001)
  Attached route: 10.255.14.214/32, Ingress route
  Reference count: 2, Transit route, Global label: 100001
```

show ldp route

Syntax	show ldp route <brief detail extensive> <destination> <instance <i>instance-name</i> >
Description	Display the entries in the LDP internal topology table. The internal topology table contains routes from inet.0 and inet.3 and is used when binding labels to FECs.
Options	<p>none—Same as brief.</p> <p>brief—(Optional) Display brief information about the entries in the LDP routing table.</p> <p>detail—(Optional) Display detailed information about the entries in the LDP routing table.</p> <p>extensive—(Optional) Display extensive information about the entries in the LDP routing table. The output of the extensive option contains information for Juniper Networks Customer Support personnel only.</p> <p><i>destination</i>—(Optional) Restrict the output to entries that are longer than the specified destination prefix and prefix length.</p> <p>instance <i>instance-name</i>—(Optional) Display routing instance information for the specified instance. If <i>instance-name</i> is omitted, then the master instance is assumed.</p>
Required Privilege Level	view
Sample Output	<p>Sample Output: show ldp route brief on page 609</p> <p>Sample Output: show ldp route detail on page 610</p>
Output Fields	<p>Destination—Destination prefix.</p> <p>Next-hop intf—Interface that is the next hop to the destination prefix.</p> <p>Next-hop address—IP address of the next hop.</p> <p>Bound to outgoing label—(Detail output only) Indicates the route has been bound to LSPs with the label being distributed for that LSP.</p>

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          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> <destination> <instance instance-name>
Description	Display information about LDP sessions.
Options	<p>none—Same as brief.</p> <p>brief—(Optional) Display brief LDP session information.</p> <p>detail—(Optional) Display detailed LDP session information.</p> <p>extensive—(Optional) Display extensive LDP session information. The output of the extensive option contains information for Juniper Networks Customer Support personnel only.</p> <p>destination—(Optional) Restrict LDP session display to the specified address.</p> <p>instance instance-name—(Optional) Display routing instance information for the specified instance. If instance-name is omitted, then the master instance is assumed.</p>
Required Privilege Level	view
Sample Output	<p>Sample Output: show ldp session brief on page 613</p> <p>Sample Output: show ldp session detail on page 613</p>
Output Fields	<p>Address—Transport address of the session.</p> <p>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.</p> <p>Connection—TCP connection state. It can be Closed, Opening, or Open.</p> <p>Hold time—Remaining hold time before the session will be closed, in seconds.</p> <p>Session ID—(Detail output only) Label space identifier of the session.</p> <p>Next keepalive—(Detail output only) Time until next keepalive is sent, in seconds.</p> <p>Active—(Detail output only) Whether the local router is playing the active role in the session.</p> <p>Maximum PDU—(Detail output only) Maximum PDU size for the session.</p> <p>Hold time—(Detail output only) Remaining hold time before the session will be closed, in seconds.</p> <p>Neighbor count—(Detail output only) Number of neighbors that are contributing to the session.</p> <p>Keepalive interval—(Detail output only) Keepalive interval, in seconds.</p>

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.

Up for—Time that this session has been up, in the format *hours:minutes:seconds*.

Authentication type—Indicates the local side of the LDP session has authentication enabled. This is not an indicator of the neighbor's authentication status. MD5 is the only authentication type supported at this time

Restarting—The LDP is in the process of gracefully restarting.

restart complete in *nnn* msec—Amount of time (in msec) remaining until graceful restart is declared complete.

Local—Information about graceful restart for the local end of an LDP session. (Graceful restart and helper mode are independent.)

Restart—Whether the local end of the LDP session is capable of performing graceful restart. It can be enabled or disabled. The default is enabled.

Helper mode—Whether the local end of the LDP session can help the restarting router with its LDP restart procedures. It can be enabled or disabled. The default is enabled.

Reconnect time—Amount of time to wait from when a restart is initiated until the router can exchange LDP messages with its neighbors. The default is 60000 msec and is not configurable at this time. (Reconnect timeout refers to "FT Reconnect timeout" in draft-ietf-mpls-ldp-restart-*nn*.)

Three possible configurations are supported:

Restart: enabled, Helper mode: enabled —The restarting router can gracefully restart and can help a neighbor restart. This mode is the default when graceful restart is configured at the [edit routing options] hierarchy level.

Restart: disabled, Helper mode: disabled—The restarting router does not recognize or support the graceful restart procedure.

Restart: disabled, Helper mode: enabled—The restarting router cannot restart gracefully, but it can help a neighbor restart. This mode is the default when graceful restart is not configured at the [edit routing options] hierarchy level.

Note that Restart: disabled, Helper mode: enabled is not a possibility, and will create an error if configured.

Remote—Information about graceful restart at the remote end of an LDP session. Graceful restart and helper mode are independent.

Restart—Whether the remote end of the LDP session can gracefully restart. It can be enabled or disabled. The default is enabled.

Helper mode—Whether the remote end of the LDP session can help the restarting router with its LDP restart procedures. It can be enabled or disabled. The default is enabled.

Reconnect time—Amount of time to wait from when a restart is initiated until the router is in a state where it can exchange LDP messages with its neighbors. The default is 60,000 ms and is not configurable at this time. (Reconnect timeout refers to “FT Reconnect timeout” in draft-ietf-mpls-ldp-restart-*nn*.)

Three possible configurations are supported:

Restart: enabled, Helper mode: enabled —The restarting router can restart RSVP gracefully and can help a neighbor restart.

Restart: disabled, Helper mode: disabled—The restarting router does not recognize or support the graceful restart procedure.

Restart: disabled, Helper mode: enabled—The restarting router cannot restart gracefully, but it can help a neighbor restart.

Note that Restart: disabled, Helper mode: enabled is not a possibility, and will create an error if configured.

**Sample Output: show
ldp session brief**

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

**Sample Output: show
ldp session detail**

```
user@host> show ldp session detail
Address: 10.255.245.220, State: Operational, Connection: Open, Hold time: 27
Session ID: 10.255.245.217:0--10.255.245.220:0
Next keepalive in 7 seconds
Passive, Maximum PDU: 4096, Hold time: 30, Neighbor count: 1
Keepalive interval: 10, Connect retry interval: 5
Local address: 10.255.245.217, Remote address: 10.255.245.220
Up for 00:00:13
Authentication type: MD5
Restarting, restart complete in 60000 msec
Local - Restart: enabled, Helper mode: enabled, Reconnect time: 60000
Remote - Restart: disabled, Helper mode: disabled
Next-hop addresses received:
so-0/2/0.0
192.168.37.94
192.168.37.96
```

show ldp statistics

Syntax show ldp statistics <instance *instance-name*>

Description Display LDP statistics.

Options: instance *instance-name*—(Optional) Display routing instance information for the specified instance. If *instance-name* is omitted, then the master instance is assumed.

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

Sessions opened                2         0
Sessions closed                0         0
Topology changes              11         0

No interface                  0         0
No session                     0         0
No adjacency                   0         0
Unknown version                0         0
Malformed PDU                  0         0
Malformed message              0         0
Unknown message type           0         0
Inappropriate message         0         0
Malformed TLV                  0         0
Bad TLV value                   0         0
Missing TLV                     0         0
PDU too large                   0         0
    
```