

# sec-profile

To specify a security profile to be associated with a listen point, use the **sec-profile** command in TN3270 listen-point configuration mode. To remove this specification, use the **no** form of this command.

**sec-profile** *profilename*

**no sec-profile** *profilename*

<b>Syntax Description</b>	<i>profilename</i>	Name originally specified in the <b>profile</b> command. It consists of a string of alphanumeric characters that specify the security profile name to be associated with a listen point. The valid character range is from 1 to 24.
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<b>Defaults</b>	No default behavior or values
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<b>Command Modes</b>	TN3270 listen-point configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.1(5)T	This command was introduced.

<b>Usage Guidelines</b>	<p>If this command is not entered or if the <b>no</b> form of the command is entered, the security profile reverts to the profile configured in the <b>default-profile</b> command. If no default profile is specified, the listen point accepts only nonsecure connections</p> <p>This command has no retroactive effect.</p>
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<b>Examples</b>	<p>The following example specifies LAM as the security profile name for all new clients connecting to listen point 10.10.10.1 until the <b>sec-profile LAM1</b> command is configured. Once the <b>sec-profile LAM1</b> command is configured, all new client connections to 10.10.10.1 will use LAM1 as the profile name.</p>
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```
tn3270-server
security
profile LAM ssl
  keylen 128
  servercert slot0:lam
  certificate reload
profile LAM1 ssl
  keylen 40
  servercert slot0:lam1
  certificate reload
listen-point 10.10.10.1
sec-profile LAM
pu DIRECT 012ABCDE tok 0 04
Sec-profile LAM1
```

## security (TN3270)

To enable security on the TN3270 server, use the **security** command in TN3270 server configuration mode. To turn off security on the TN3270 server, use the **no** form of this command.

**security**

**no security**

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

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**Defaults** The default is to have security enabled.

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**Command Modes** TN3270 server configuration

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Command History	Release	Modification
	12.1(5)T	This command was introduced.

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**Usage Guidelines** If the **no** form of this command is configured, any listen points that contain a security profile definition are reconfigured and are no longer secure. Sessions already established on the listen point will continue to run in the same mode (secure or nonsecure) as originally configured. If sessions are active on a listen point, a message will be sent to the console stating that the listen point has sessions running with an outdated security specification. A shutdown/restart sequence must be performed on the listen point if the user wants the sessions on the listen point to use the new specification.

Entering the **security** command moves the user into security configuration mode. Entering the **no** form of this command moves the user to a TN3270 server configuration mode.

This command has no retroactive effect.

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**Examples** In the following example, security is enabled on the TN3270 server:

```
tn3270-server
 security
  profile secure-1 ssl
```

# servercert

To specify the location of the TN3270 server's security certificate in the router's Flash memory, use the **servercert** command in profile configuration mode.

**servercert** *location*

## Syntax Description

<i>location</i>	Hexadecimal string of up to 63 characters specifying the location of the server's certificate in the Flash memory.
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## Defaults

No default behavior or values

## Command Modes

Profile configuration

## Command History

Release	Modification
12.1(5)T	This command was introduced.

## Usage Guidelines

The certificate is in X.509 format, signed by a certification authority (CA). The certificate must be created offline. It cannot be created using the Cisco IOS software. Use third-party software or a Windows-based utility. The certificate should be in privacy enhanced mail (PEM) or Base 64 format. The output from the certificate generation contains two parts: the certificate and the private key. Concatenate these two files to create a single certificate file in PEM or Base 64 format.

Store the concatenated file in Flash memory using TFIP and the location entered using the **servercert** *location* command. If the file does not exist in the Flash memory when the command is entered, an error message is displayed indicating that the file does not exist. The first time this command is configured the certificate is automatically loaded from the specified location. Subsequent changes to the location file do not cause the certificate to be read automatically into system's memory. The **certificate reload** command must be entered to read the certificate into memory. If the user exits from the profile configuration mode without configuring the **servercert** command, a warning message is displayed. The warning message indicates that it is mandatory to configure a certificate using the **servercert** command.

## Examples

The following example specifies that slot0:lam is the location of the security certificate:

```
tn3270-server
security
profile LAM ssl
keylen 512
servercert slot0:lam
certificate reload
```

## Related Commands

Command	Description
profile	Specifies a name and a security protocol for a security profile and enters profile configuration mode.

# show alps ascu

To display the status of the Airline Product Set (ALPS) agent-set control unit (ASCU), use the **show alps ascu** command in user EXEC or privileged EXEC mode.

**show alps ascu** [*interface* [*id*]] [**detail**]

## Syntax Description

<i>interface</i> [ <i>id</i> ]	(Optional) Combined interface and ASCU interchange address (IA). If the interface and ASCU are specified, the status for only the ASCU on that interface is displayed. If only the interface is specified, all ASCUs defined on that interface are displayed. If the interface and ASCU are not specified, then all ASCUs defined are displayed.
<b>detail</b>	(Optional) Displays detailed output.

## Command Modes

User EXEC  
Privileged EXEC

## Command History

Release	Modification
11.3(6)T	This command was introduced.
12.0(5)T	The output of this command was modified.
12.1(2)T	The output for the <b>detail</b> version of this command was modified.

## Examples

The following sample output from the **show alps ascu** command:

```
router# show alps ascu

interface  dlc id a1 a2 circuit      pkt_tx    pkt_rx    state
-----
Serial1/2  ALC 5F 41 42 MATIP-ALC    0         0         DOWN
Serial1/3  UTS 21 23 4A MATIP         0         0         DOWN
Serial1/6  ALC 5F 41 45 MATIP-ALC    0         0         DOWN
Serial1/6  ALC 6F 41 44 MATIP-ALC    0         0         DOWN
Total number of ASCUs: 4
Total number of up ASCUs: 0
```

The following is sample output from the **show alps ascu detail** command for ASCUs 4F and 6F on serial interface 1/6:

```
Router# show alps ascu detail

ascu 4F on i/f Serial1/6, dlc = ALC, state = UP
  default-circuit = MATIP-ALC, a1 = 41, a2 = 45
  max_msg_len = 962, retry_option = none, alias = 6F
  err_disp_terminal = 114, err_disp_line = 102
  pkt_tx = 0, byte_tx = 0, pkt_rx = 0, byte_rx = 0
  bad_CCC = 0, garbledMsgs = 0, T1Timeouts = 0
```

```

ascu 6F on i/f Serial1/6, dlc = ALC, state = DOWN
  default-circuit = MATIP-ALC, a1 = 41, a2 = 44
  max_msg_len = 962, retry_option = none
  err_disp_terminal = 114, err_disp_line = 102
  pkt_tx = 0, byte_tx = 0, pkt_rx = 0, byte_rx = 0
  bad_CCC = 0, garbledMsgs = 0, T1Timeouts = 14

```

Table 6 describes the significant fields in the display.

**Table 6** *show alps ascu Field Descriptions*

Field	Description
dlc	Data link control.
state	Status of connection; UP, DOWN, or DISABLED.
default-circuit	Name of the default circuit.
a1	Logical ASCU identification information for A1.
a2	Logical ASCU identification information for A2.
max_msg_len	Maximum input message length. Protocol level count that includes all protocol overhead plus data. The valid range is from 1 to 3840 bytes. The default is 962 bytes. Anything over the maximum is discarded and the interface giant counter is incremented. This does not apply to the GarbledMsg for the ASCU.
retry_option	<p>Retry option. When a message with a bad cycle check character (CCC) is received from an ASCU, a retry option can be configured using the <b>alps retry-option</b> command. The retry option configures the customer premise equipment (CPE) to send a message to the ASCU. The following retry options are available:</p> <ul style="list-style-type: none"> <li>resend—Indicator LED signals the operator at the ASCU to resend data.</li> <li>reenter—Service messages signal the operator at the ASCU to reenter data.</li> </ul> <p>The default retry option is no retry.</p>
alias	Parent ASCU interchange address to which this nonpolling automatic level control (ALC) ASCU is aliased.
err_disp_terminal	Terminal address to which error service messages are sent.
err_disp_line	Screen line number where error service messages are sent.
pkt_tx	Packets sent.
byte_tx	Bytes sent.
pkt_rx	Packets received.
byte_rx	Bytes received.
bad_CCC	Number of bad CCCs. A bad CCC occurs when the proper control characters were received, the characters did not exceed the maximum length, and the CCC calculation fails.

**Table 6** *show alps ascu Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
garbledMsgs	Number of garbled messages. Garbled messages are a result of a range of different errors, including the following: <ul style="list-style-type: none"><li>• An unexpected character is received.</li><li>• The maximum interface buffer size is exceeded.</li><li>• The maximum message length is exceeded.</li></ul>
T1Timeouts	Number of response timeouts.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>alps ascu</b>	Specifies a physical ASCU identity.

# show alps circuits

To display the status of the Airline Product Set (ALPS) circuits, use the **show alps circuits** command in user EXEC or privileged EXEC mode. If a circuit name is specified, then only the status of that circuit will be displayed; otherwise, the status of all circuits will be displayed.

**show alps circuits** [**peer** *ipaddress*] [**name** *name*] [**detail**]

Syntax Description	
<b>peer</b> <i>ipaddress</i>	(Optional) Displays the status of the circuits connected to the specified peer.
<b>name</b> <i>name</i>	(Optional) Displays only the status of that circuit.
<b>detail</b>	(Optional) Displays detailed output.

Command Modes	
	User EXEC
	Privileged EXEC

Command History	Release	Modification
	11.3 T	This command was introduced.
	12.0(5)T	This command was modified.

## Examples

The following is sample output from the **show alps circuits** command:

```
router# show alps circuits
name          pri_peer      curr_peer      dlc    state  pkt_tx  pkt_rx
-----
CKT1          172.18.60.201 0.0.0.0        NONE   DISC   0        0
CKT2          172.18.60.201 0.0.0.0        NONE   DISC   0        0
MATIP         10.100.1.2     0.0.0.0        UTS    DISC   0        0
MATIP-ALC    10.100.1.2     0.0.0.0        ALC    INOP   0        0
Total number of circuits: 4
Total number of connected circuits: 0
```

The following is sample output from the **show alps circuits** command using the **detail** keyword:

```
router# show alps circuit name matip-alc detail

MATIP-ALC: dlc = ALC, conn_type = PERM, state = INOP, uptime = 00:00:00
  down reason = noReason
  pri_peer = 10.100.1.2, sec_peer = 0.0.0.0
  curr_peer = 0.0.0.0,
  local_hld = 4D02, remote_hld = 7F7F
  emtox: hostlink = 255, x121 = 1234
  lifetime_tmr = 4, idle_tmr = 60, retry_tmr = 30
  pkt_tx = 0, byte_tx = 0, pkt_rx = 0, byte_rx = 0
  src_corr = 0, dst_corr = 0
  drops_q_overflow = 0, drops_ckt_disabled = 0
  drops_lifetime_tmr = 0, drops_invalid_ascu = 0
  ascus: (41,42)U, (41,44)U, (41,45)U
Total number of ASCUs: 3
```

# show alps peers

To display the status of the Airline Product Set (ALPS) partner peers, use the **show alps peers** command in user EXEC or privileged EXEC mode.

**show alps peers** [*ipaddress address*] [**detail**]

## Syntax Description

<b>ipaddress address</b>	(Optional) Displays only the status of that agent-set control unit (ASCU).
<b>detail</b>	(Optional) Displays detailed output.

## Command Modes

User EXEC  
Privileged EXEC

## Command History

Release	Modification
11.3(6)T	This command was introduced.
12.0(5)T	This command was modified.

## Usage Guidelines

If an IP address is specified, then only the status of that peer will be displayed; otherwise, the status of all peers will be displayed.

## Examples

The following is sample output from the **show alps peers detail** command:

```
router# show alps peers detail

TCP:10.227.50.106, conn_id = MATIP_A_CKT-2
  protocol = MATIP_A, fport = 350, lport = 11592
  type = DYN, create = ADMIN, state = OPENED, uptime = 00:00:53
  down reason = unknown
  pkt_tx = 1071, byte_tx = 37264, pkt_rx = 1066, byte_rx = 36010
  Drops:giants = 0, q_overflow = 0, peer_down = 0, ver_mismatch = 0
```

**Table 7** show alps peers detail Field Descriptions

Field	Description
TCP	Remote peer IP address.
conn_id	Configured circuit name.
protocol	Protocol can be one of the following: <ul style="list-style-type: none"> <li>ATP = This protocol is used when two routers form peers.</li> <li>MATIP = This protocol is used when one router directly communicates with the mainframe.</li> <li>UNKNOWN = This protocol implies that the peer is down.</li> </ul>

**Table 7** show alps peers detail Field Descriptions (continued)

Field	Description
fport	Foreign TCP port.
lport	Local TCP port.
type	Type can either be PERM or DYN. <ul style="list-style-type: none"> <li>• PERM =Permanent; this peer will always be connected.</li> <li>• DYN =Dynamic; this peer will go up and down based on traffic. If there is no traffic, the peer will go down.</li> </ul>
create	Create can either be ADMIN or LEARN. <ul style="list-style-type: none"> <li>• ADMIN = This peer was configured on this router, and the peer was started from this router.</li> <li>• LEARN = This is an incoming connection.</li> </ul>
state	State can be one of the following: <ul style="list-style-type: none"> <li>• DISCONN = Peer is not connected.</li> <li>• OPENING = Peer is in the process of opening.</li> <li>• OPENED = Peer is connected and is ready to exchange data.</li> <li>• WAN_BUSY = There is traffic on our end of the TCP connection.</li> </ul>
uptime	Time for which the peer is up and running.
down reason	It can assume the following 8 values : idle, noCircuits, destUnreachable, foreignReset, localReset, noMemory, openingTimeout, unknown.
pkt_tx	Number of packets transmitted.
pkt_rx	Number of packets received.
byte_tx	Number of bytes transmitted.
byte_rx	Number of bytes received.
drops_giant	Number of packets that are dropped. A giant is counted when the ALPS process receives a packet from TCP that exceeds the maximum ALPS packet size of 4096 bytes.
q_overflow	This counter is incremented whenever an attempt to send a packet to the TCP peer fails.
peer_down	This counter is incremented when the peer is not reachable.
ver_mismatch	This counter is incremented because of mismatch between the local ALPS version and the ones received from TCP.
active_ckts	Configured names of the circuits that are active over this peer.

**Related Commands**

Command	Description
<b>alps primary-peer</b>	Specifies the primary TCP peer and, optionally, a backup TCP peer for this ALPS circuit.
<b>alps remote-peer</b>	Specifies the partner IP address.

# show bsc

To display statistics about the interfaces on which Bisync is configured, use the **show bsc** command in privileged EXEC mode.

```
show bsc [group bstun-group-number] [address address-list]
```

Syntax Description	
<b>group</b> <i>bstun-group-number</i>	(Optional) block serial tunnel (BSTUN) group number. Valid numbers are decimal integers in the range from 1 to 255.
<b>address</b> <i>address-list</i>	(Optional) List of poll addresses.

Command Modes	Privileged EXEC
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Command History	Release	Modification
	11.0	This command was introduced.

## Examples

The following is sample output from the **show bsc** command:

```
Router# show bsc

BSC pass-through on Serial4:
HDX enforcement state: IDLE.
Frame sequencing state: IDLE.
Total Tx Counts: 0 frames(total). 0 frames(data). 0 bytes.
Total Rx Counts: 0 frames(total). 0 frames(data). 0 bytes.

BSC local-ack on serial15:
Secondary state is CU_Idle.
Control units on this interface:

    Poll address: C2. Select address: E2.
    State is Active.
    Tx Counts: 1137 frames(total). 0 frames(data). 1137 bytes.
    Rx Counts: 1142 frames(total). 0 frames(data). 5710 bytes.

    Poll address: C3. Select address: E3 *CURRENT-CU*
    State is Active.
    Tx Counts: 1136 frames(total). 0 frames(data). 1136 bytes.
    Rx Counts: 1142 frames(total). 0 frames(data). 5710 bytes.

Total Tx Counts: 2273 frames(total). 0 frames(data). 2273 bytes.
Total Rx Counts: 2284 frames(total). 0 frames(data). 11420 bytes.
```

The following is sample output from the **show bsc** command specifying BSTUN group 50:

```
Router# show bsc group 50

BSC local-ack on serial15:
Secondary state is CU_Idle.
Control units on this interface:
```

```

Poll address: C2. Select address: E2.
State is Active.
Tx Counts: 1217 frames(total). 0 frames(data). 1217 bytes.
Rx Counts: 1222 frames(total). 0 frames(data). 6110 bytes.

```

```

Poll address: C3. Select address: E3 *CURRENT-CU*
State is Active.
Tx Counts: 1214 frames(total). 0 frames(data). 1214 bytes.
Rx Counts: 1220 frames(total). 0 frames(data). 6100 bytes.

```

```

Total Tx Counts: 2431 frames(total). 0 frames(data). 2431 bytes.
Total Rx Counts: 2442 frames(total). 0 frames(data). 12200 bytes.

```

The following is sample output from the **show bsc** command specifying BSTUN group 50 and poll address C2:

```
Router# show bsc group 50 address C2
```

```

BSC local-ack on serial5:
Secondary state is CU_Idle.
Control units on this interface:

```

```

Poll address: C2. Select address: E2.
State is Active.
Tx Counts: 1217 frames(total). 0 frames(data). 1217 bytes.
Rx Counts: 1222 frames(total). 0 frames(data). 6110 bytes.

```

```

Total Tx Counts: 1217 frames(total). 0 frames(data). 1217 bytes.
Total Rx Counts: 1222 frames(total). 0 frames(data). 6110 bytes.

```

The following is sample output from the **show bsc** command specifying poll address C2:

```
Router# show bsc address C2
```

```

BSC pass-through on Serial4:
HDX enforcement state: IDLE.
Frame sequencing state: IDLE.
Total Tx Counts: 0 frames(total). 0 frames(data). 0 bytes.
Total Rx Counts: 0 frames(total). 0 frames(data). 0 bytes.

```

```

BSC local-ack on serial5:
Secondary state is CU_Idle.
Control units on this interface:

```

```

Poll address: C2. Select address: E2.
State is Active.
Tx Counts: 1137 frames(total). 0 frames(data). 1137 bytes.
Rx Counts: 1142 frames(total). 0 frames(data). 5710 bytes.

```

```

Total Tx Counts: 1137 frames(total). 0 frames(data). 1137 bytes.
Total Rx Counts: 1142 frames(total). 0 frames(data). 5710 bytes.

```

[Table 8](#) describes the fields shown in the display.

**Table 8** *show bsc Field Descriptions*

Field	Description
BSC <i>x</i> on <i>interface y</i>	Indicates whether the router is configured for pass-through or local acknowledgment on the indicated interface.
Output queue depth	Packets queued on this interface. This field is displayed only when the value is not zero.

**Table 8** *show bsc Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
Frame builder state	Current frame building state. This field is displayed only when the state is not IDLE.
HDX enforcement state	Current half-duplex send enforcement state. The values are: <ul style="list-style-type: none"> <li>• IDLE—Waiting for communication activity.</li> <li>• PND_COMP—Waiting for router to send.</li> <li>• PND_RCV—Waiting for attached device to respond to data sent.</li> </ul>
Frame sequencing state	Frame sequencing state to protect against network latencies. When the router is configured as the primary end of the link, the values are: <ul style="list-style-type: none"> <li>• IDLE—Waiting for a poll.</li> <li>• SEC—In a session with a device.</li> </ul> When the router is configured as the secondary end of the link, the values are: <ul style="list-style-type: none"> <li>• IDLE—Waiting for a poll.</li> <li>• PRI—In a session with a device.</li> </ul> When the router is configured for point-to-point contention, the values are: <ul style="list-style-type: none"> <li>• IDLE—Waiting for a poll.</li> <li>• PEND—Waiting for the first data frame.</li> <li>• PRI—Connected device is acting as a primary device.</li> <li>• SEC—Connected device is acting as a secondary device.</li> </ul>
Total Tx Counts	Total transmit frame count for the indicated interface.
Total Rx Count	Total receive frame count for the indicated interface.
Primary state is ...	The current state when the router is configured as the primary end of the link. The possible values are: <ul style="list-style-type: none"> <li>• TCU_Down—Waiting for the line to become active.</li> <li>• TCU_EOFfile—A valid block ending in ETX has been received.</li> <li>• TCU_Idle—Waiting for work or notification of completion of the sending of end of transmission (EOT).</li> <li>• TCU_InFile—A valid block ending in ETB has been received.</li> <li>• TCU_Polled—A general poll has been issued.</li> <li>• TCU_Selected—A select has been issued.</li> <li>• TCU_SpecPolled—A specific poll has been sent.</li> <li>• TCU_TtdDelay—An ETB block was acknowledged, but the next block to be sent has not yet been received.</li> <li>• TCU_TtdSent—A TTD has been sent because no data was received by the time the timeout for sending Ttd expired.</li> <li>• TCU_TxEOFfile—A block of data ending in ETX has been sent.</li> <li>• TCU_TxInFile—A block of data ending in ETB has been sent.</li> <li>• TCU_TxRetry—Trying to send a frame again.</li> </ul>

**Table 8** *show bsc Field Descriptions (continued)*

Field	Description
Secondary state is ...	<p>The current state when the router is configured as the secondary end of the link. The possible values are:</p> <ul style="list-style-type: none"> <li>• CU_DevBusy—A select has been refused with WACK or RVI.</li> <li>• CU_Down—Waiting for the line to become active.</li> <li>• CU_EOFFile—A valid block ending in ETX has been received.</li> <li>• CU_Idle—Waiting for a poll or select action.</li> <li>• CU_InFile—A valid block ending in ETB has been received.</li> <li>• CU_Selected—A select has been acknowledged.</li> <li>• CU_TtdDelay—An ETB block was acknowledged, but the next block to be sent has not yet been received.</li> <li>• CU_TtdSent—A TTD has been sent because no data was received by the time the timeout for sending Ttd expired.</li> <li>• CU_TxEOFFile—A block of data ending in ETX has been sent.</li> <li>• CU_TxInFile—A block of data ending in ETB has been sent.</li> <li>• CU_TxRetry—Trying to send a frame again.</li> <li>• CU_TxSpecPollData—A data frame (typically S/S) has been used to answer a specific poll.</li> <li>• CU_TxStatus—Host has polled for device-specific status.</li> </ul>
Poll address	Address used when the host wants to get device information.
Select address	Address used when the host wants to send data to the device.
State is ...	<p>Current initialization state of this control unit. The values are:</p> <ul style="list-style-type: none"> <li>• Active—The remote device is active.</li> <li>• Inactive—The remote device is dead.</li> <li>• Initializing—No response from remote device yet.</li> </ul>
Tx Counts	Transmit frame count for this control unit.
Rx Counts	Receive frame count for this control unit.
Total Tx Counts	Total transmit frame count for the indicated interface.
Total Rx Counts	Total receive frame count for the indicated interface.

# show bstun

To display the current status of serial tunnel (STUN) connections, use the **show bstun** command in privileged EXEC mode.

```
show bstun [group bstun-group-number] [address address-list]
```

## Syntax Description

<b>group</b> <i>bstun-group-number</i>	(Optional) Block Serial Tunneling (BSTUN) group number. Valid numbers are decimal integers in the range from 1 to 255.
<b>address</b> <i>address-list</i>	(Optional) List of poll addresses.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
11.0	This command was introduced.
12.2(4)T	This command was modified for the Bisync-to-IP Conversion for Automated Teller Machines feature. The display was modified to include Bisync-to-IP (BIP) as a transport protocol, and to show both the foreign and local port numbers.

## Examples

The following is sample output from the **show bstun** command with no options:

```
Router# show bstun

This peer: 172.26.54.111
 *Serial0/0 (group 201 [bsc-local-ack])
route transport address          dlci  lsap    state    rx_pkts  tx_pkts  drops
C1    TCP      172.26.54.2                    closed    0         0         0
C2    TCP      172.26.54.2                    closed    0         0         0
C3    TCP      172.26.54.2                    closed    0         0         0
```

The following is sample output from the **show bstun** command using the new BIP configuration:

```
Router# show bstun

This peer: 172.26.54.111
 *Serial0/0 (group 201 [bsc-local-ack])
route transport address          fport  lport    state    rx_pkts  tx_pkts  drops
C1    BIP      172.26.54.2  2002   1963    closed    0         0         0
C2    BIP      172.26.54.2  2001   1963    closed    0         0         0
C3    BIP      172.26.54.2  2000   1963    closed    0         0         0
```

[Table 9](#) describes the significant fields shown in the output.

**Table 9** show bstun Field Descriptions

Field	Description
This peer	Lists the peer name or address. The interface name (as defined by the <b>description</b> command), its block serial tunnel (BSTUN) group number, and the protocol associated with the group are shown on the next header line.
route	Bisync control unit address.
transport	Description of link, either a serial interface using serial transport (indicated by IF followed by interface name), a TCP connection to a remote router (TCP followed by IP address), or a BIP connection to a bisync device (BIP followed by an IP address).
address	Address or the word <i>all</i> if the default forwarding entry is specified, followed by a repeat of the group number given for the interface.
fport	The foreign port number.
lport	The local port number.
state	State of the link (open, direct, and closed): open is the normal, working state; direct indicates a direct link to another line; closed indicates that the link is not receiving packets.
rx_pkts	Number of received packets.
tx_pkts	Number of sent packets.
drops	Number of packets that had to be dropped for whatever reason.

# show controllers channel

To display Channel Port Adapter (CPA)-specific information, including the loaded microcode, use the **show controllers channel** command in user EXEC or privileged EXEC mode.

**show controllers channel** [*slot/port*]

Syntax Description	
<i>slot</i>	(Optional) Slot number.
<i>port</i>	(Optional) Interface number.

Command Modes	
	User EXEC Privileged EXEC

Command History	Release	Modification
	11.3 T	This command was introduced.

**Examples** The following is sample output from the **show controllers channel** command:

```
Router# show controllers channel 5/0

ECPA 5, hardware version 1.0, microcode version 26.0
  Mailbox commands: 0 forevers, 0 max elapsed usecs
  Microcode loaded from flash slot0:xcpa26-0_kernel_xcpa
  Loaded:seg_eca          Rev. 0   Compiled by cip-release on 01-Apr-98
  EPROM version 1.0, VPLD version 1.1
  ECA0: hw version 255, microcode version C50602D1
  Load metrics:
    Memory      sram 2964552/4096K, dram 11552952/16M
    CPU         1m  0%, 5m  0%, 60m  0%
    DMA         1m  0%, 5m  0%, 60m  0%
    ECA0        1m  0%, 5m  0%, 60m  0%

Interface Channel5/0
Hardware is Escon Channel
HW Registers control status=0x0001EC07 LED control=0x00045DD5
HW Poll Register 4B05D4E0:[00000001]
Free buffer queues
  queue=0 max_entries=128 size=600 head=39 ring=4B095F00
  queue=1 max_entries=32 size=4520 head=31 ring=4B095E40
  queue=2 max_entries=64 size=4520 head=63 ring=4B096140
Tx Queues
  queue=0 head=0 tail=0 tx_cnt=0 tx_pakcnt=0
  max_entries=128 type=1 poll_index=0 ring=4B0963C0
  fspak buffers swapped out=0
  queue=1 head=31 tail=31 tx_cnt=0 tx_pakcnt=0
  max_entries=32 type=2 poll_index=1 ring=4B096280
  fspak buffers swapped out=0
Rx Queues
  max_entries=221 poll_index=3 head=57 ring=4B096800
  max packets per interrupt count = 0
```

# show dbconn connection

To display the status of Cisco Transaction Connection (CTRC) connections to DATABASE2 (DB2), use the **show dbconn connection** command in user EXEC or privileged EXEC mode.

```
show dbconn connection [connection-id | server server-name | userid user-id | rdbname
rdb-name]
```

Syntax Description	
<i>connection-id</i>	(Optional) Displays the status of a specified connection.
<b>server</b> <i>server-name</i>	(Optional) Displays connection information for the specified server.
<b>userid</b> <i>user-id</i>	(Optional) Displays connections for the specified user ID.
<b>rdbname</b> <i>rdb-name</i>	(Optional) Displays connections for the specified relational database (RDB) name.

**Defaults** If you do not specify any keywords, this command displays information for all CTRC connections to DB2 on the current router.

**Command Modes** User EXEC  
Privileged EXEC

Command History	Release	Modification
	11.3(2)T	This command was introduced.
	12.0(5)XN	This command moved from the CDBC feature to the CTRC feature.

**Examples** The following is sample output from the **show dbconn connection** command:

```
Router# show dbconn connection

ID          Server          Userid          ClientIPAddress Connect    Idle
6127E428    SERVERA          ALLIE           10.999.989.36  00:01:26  00:01:12
6127D34C    BUDDY            10.999.989.84  00:00:48  00:00:41
```

The following is sample output from the **show dbconn connection** command for a specified connection:

```
Router# show dbconn connection 6127D34C
      connection id: 6127D34C
      connection state: active
      server: BUDDY
      rdbname: DB2510
      userid: (none)
      client name:
      local ip-address: 10.147.235.2
      local port: 500
      client ip-address: 10.999.989.84
      client port: 4258
      connect time: 00:53:27
      idle time: 00:00:04 (client)
```

```
bytes received from client: 30478
bytes received from host: 318222
client: licensed StarSQL
```

Table 10 describes the fields shown in the display.

**Table 10** show dbconn connection Field Descriptions

Field	Description
connection id	Identification number of the connection made by a Distributed Relational Database Architecture (DRDA) client to the CTRC server.
connection state	Status of the connection made by a DRDA client.
server	Name of the CTRC server.
rdbname	Name of the relational database on the IBM system.
userid	User ID of the user connected through a port to the CTRC server.
client name	Name of the client system.
local ip-address	IP address of the CTRC server in the router to which the client connects.
local port	Port in the CTRC server through which the client connects.
client ip-address	IP address of the client connected to the CTRC server.
client port	Port used by the client to connect to the CTRC server.
connect time	Time in hh:mm:ss when connection was made by the client to the CTRC server.
idle time	Amount of time in hh:mm:ss that the active client connection has been idle.
bytes received from client	Number of bytes the router has received from the client via the specified connection.
bytes received from host	Number of bytes the router has received from the host via the specified connection
client	Indicates whether the client connection uses a licensed StarSQL Open DataBase Connectivity (ODBC)-Distributed Relational Database Architecture (DRDA) driver or another DRDA driver.

**Related Commands**

Command	Description
<b>show dbconn license</b>	Displays the status of CTRC licenses for DB2 communications.
<b>show dbconn ports</b>	Displays information about CTRC ports used for DB2 communications.
<b>show dbconn server</b>	Displays information about CTRC servers configured for DB2 communications.

# show dbconn license

To display the status of Cisco Transaction Connection (CTRC) licenses for DATABASE2 (DB2) communications, use the **show dbconn license** command in user EXEC or privileged EXEC mode.

**show dbconn license**

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

**Defaults** No default behavior or values

**Command Modes** User EXEC  
Privileged EXEC

Command History	Release	Modification
	11.3(2)T	This command was introduced.
	12.0(5)XN	This command moved from the Cisco Database Connection (CDBC) feature to the Cisco Transaction Connection (CTRC) feature.

**Usage Guidelines** This command produces the same results as the **show txconn license** command because Cisco Transaction Connection (CTRC) licenses are shared between DB2 connections and Customer Information Control System (CICS) conversations.

**Examples** The following is sample output for a CTRC router that is configured to allow up to 1000 connections until January 1, 2005:

```
Router# show dbconn license
```

```
CTRC is licensed for 1000 connections, 756 connections in use
Expires on 1-1-2005.
```

Related Commands	Command	Description
	<b>dbconn license</b>	Configures client licenses for CTRC connections to DB2 or CICS.
	<b>show txconn license</b>	Displays the status of licenses used for CTRC.
	<b>txconn license</b>	Licenses a Cisco router for CTRC communications with CICS or DB2.

# show dbconn ports

To display information about ports that Cisco Transaction Connection (CTRC) is using for communications to DATABASE2 (DB2), use the **show dbconn ports** command in user EXEC or privileged EXEC mode.

## show dbconn ports

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

**Defaults** No default behavior or values

**Command Modes** User EXEC  
Privileged EXEC

Command History	Release	Modification
	11.3(2)T	This command was introduced.
	12.0(5)XN	This command moved from the Cisco Database Connection (CDBC) feature to the Cisco Transaction Connection (CTRC) feature.

**Examples** The following is sample output from the **show dbconn ports** command:

```
Router# show dbconn ports

Port  State
446   listening
447   listening
```

[Table 11](#) describes the fields shown in the display.

**Table 11** show dbconn ports Field Descriptions

Field	Description
Port	Port number.
State	Listening or disabled status.

Related Commands	Command	Description
	<b>show dbconn connection</b>	Displays the status of CTRC connections to DB2.
	<b>show dbconn license</b>	Displays the status of CTRC licenses for DB2 communications.
	<b>show dbconn server</b>	Displays information about CTRC servers configured for DB2 communications.

# show dbconn server

To display information about Cisco Transaction Connection (CTRC) servers configured for DATABASE2 (DB2) communications, use the **show dbconn server** command in user EXEC or privileged EXEC mode.

```
show dbconn server [server-name]
```

## Syntax Description

<i>server-name</i>	(Optional) Specific server for which information should be displayed. When this argument is omitted, this command displays information for all CTRC servers configured for DB2 communications on the current router.
--------------------	--

## Defaults

If no server name is specified, this command displays information for all CTRC servers configured for DB2 communications on the current router.

## Command Modes

User EXEC  
Privileged EXEC

## Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	This command moved from the Cisco Database Connection (CDBC) feature to the Cisco Transaction Connection (CTRC) feature.

## Examples

The following is sample output from the **show dbconn server** command:

```
Router# show dbconn server

Server      Port  IPAddress      RDBName      State      NumConn
SERVERA    446   0.0.0.0        MATY          enabled    56
SERVERB    446   0.0.0.0        SCU_DSNM     enabled    24
SERVERC    446   0.0.0.0        DSN4         enabled    19
SERVERD    446   0.0.0.0        MKTG         enabled    130
SERVERE    446   0.0.0.0        ABBY         enabled    76
SERVERF    446   0.0.0.0        DB2510       enabled    320
SERVERG    446   0.0.0.0        ELLE         enabled    3
SERVERH    446   0.0.0.0        SUNSET       enabled    0
SERVERI    446   0.0.0.0        NELL         enabled    1
SERVERJ    446   10.989.999.32  SAMPLE       enabled    12
SERVERK    446   0.0.0.0        DB2410       enabled    154
SERVERL    446   0.0.0.0        SQLDS        enabled    50
SERVERM    446   0.0.0.0        STELLA       disabled   0
SERVERN    446   10.10.19.4    OAK          enabled    2
SERVERO    447   0.0.0.0        DB2510       enabled    237
BUDDY      446   0.0.0.0        DB2510       enabled    756
```

The following is sample output from the **show dbconn server** command where the server BUDDY is specified:

```
Router# show dbconn server BUDDY
```

```

server: BUDDY
server state: enabled (accepting connections)
ip-address: 0.0.0.0
port: 446
rdbname: DB2510
connection type: SNA
rlu: STARW.DSNV510
mode: IBMRDB
tpname: \x076DB
idle-timeout: 0 (none)
window-size: 4096 bytes
database server name: (unknown)
database product id: (unknown)
PEM: not configured
number of connections: 0
RDB server: active
WLM: inactive-enabled

```

Table 12 describes the fields shown in the display.

**Table 12 show dbconn server Field Descriptions**

Field	Description
server	CTRC server name.
server state	Current state of the server (enabled or disabled).
ip-address	IP address of the CTRC server in the router to which the client connects.
port	Port number through which the CTRC server accepts a client connection.
rdbname	Name of the remote database accessed by the CTRC server.
connection type	Indicates whether the type of connection between the CTRC router and the DB2 host is via Systems Network Architecture (SNA) or Transmission Control Protocol/Internet Protocol (TCP/IP).
rlu	Remote SNA logical unit (LU) used when connecting to the database server.
mode	SNA mode used when connecting to the database.
tpname	SNA transaction program name used for the Distributed Relational Database Architecture (DRDA) server on the database system.
idle-timeout	Maximum length of time allowed for inactive connections to the CTRC server.
window-size	TCP receive window size.
database server name	System name returned by the database server. Field shows <i>none</i> until first contact.
database product id	Database product ID. Field shows <i>none</i> until first contact.
PEM rlu	The host remote LU name the server will connect to when performing password management.
PEM mode	The Advanced Program-to-Program Communication (APPC) mode the server will use when performing password management.
PEM tpname	The name of the privacy enhanced mail (PEM) transaction program on the host (the APPC Signon transaction program, an architected APPC transaction program [TP]).

**Table 12** *show dbconn server Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
number of connections	Number of all Open DataBase Connectivity (ODBC) clients connected to the CTRC server.
RDB server	Indicates whether the host database status is active or unreachable.
wlm	Indicates whether the Workload Manager status is not enabled, inactive-enabled, or active-enabled.

# show dbconn statistic

To display all Cisco Transaction Connection (CTRC) statistics concerning communications with DATABASE2 (DB2), use the **show dbconn statistic** command in privileged EXEC mode.

```
show dbconn statistic [kind {histogram | summary}] name {chains | clientturnaround |
connectionsdown | connectionsup | dump | hostreceived | hostresponse | hostsent | latency |
maxconnections}
```

## Syntax Description

**kind {histogram | summary}** (Optional) Desired format for the statistics to be displayed. Valid values are:

- **histogram**—Displays the named statistic in a graphical format. You cannot use the histogram format when displaying all the statistics (in conjunction with the **name dump** parameter).
- **summary**—Displays the named statistic in a tabular format.

If you do not specify the **kind** parameter, the statistics are displayed in **summary** format (tabular). See the “Usage Guidelines” for a description of time periods in the summary statistics.

**name {chains | clientturnaround | connectionsdown | connectionsup | dump | hostreceived | hostresponse | hostsent | latency | maxconnections}**

The statistics you can display with the **name** keyword are:

- **chains**—Displays statistics for number of chains created.
- **clientturnaround**—Displays statistics for average time from receiving a DB2 client communication to sending that client a response.
- **connectionsdown**—Displays the number of connections completed between CTRC and DB2 during the indicated time period.
- **connectionsup**—Displays the number of connections created between CTRC and DB2 during the indicated time period.
- **dump**—Displays a compact statistics summary, in tabular format, for the last 24 hours. The statistics dump includes all the individual statistics you can specify with the name keyword.
- **hostreceived**—Displays the total number of bytes the router has received from DB2 hosts during the indicated time period.
- **hostresponse**—Displays the average host response time in seconds for DB2 connections during the indicated time period.
- **hostsent**—Displays the total number of bytes the router has sent to DB2 hosts during the indicated time period.

- **latency**—Displays the average amount of time in seconds used by the txconn server per Customer Information Control System (CICS) client request (clientturnaround minus hostresponse).
- **maxconnections**—Displays the maximum number of concurrent connections to CICS clients established during the indicated time period.
- **maxtransactions**—Displays the maximum number of concurrent CICS transactions during the indicated time period.
- **totalconnections**—Displays the total number of connections to CICS clients used during the indicated time period.
- **totaltransactions**—Displays the total number of CICS transactions processed during the indicated time period.

**Defaults**

No default behavior or values

**Command Modes**

Privileged EXEC

**Command History**

Release	Modification
12.0(5)XN	This command was introduced.

**Usage Guidelines**

Summary statistics are displayed by time period, where:

- [24] indicates statistics for the hour in progress.
- [00] through [23] indicate statistics for the preceding 24 hours, with [00] always corresponding to the last midnight-to-1 a.m. period and [23] always corresponding to the last 11 p.m.-to-midnight period, regardless of the current time.

At the top of each hour, the statistics for the current period are moved from [24] to the appropriate period, [00] through [23], and [24] is reset to 0.

In the following example, at 3 a.m. the statistics for the current period are moved to [02], overwriting the old statistics for that period, and [24] is reset to 0:

At 2:59 a.m.:

```

[24]=228
[00]=217[01]=352[02]=209[03]=313[04]=156. . .
Mid-1 am1-2 a.m.2-3 a.m.3-4 a.m.4-5 a.m.. . .
02-24-200102-24-200102-24-200102-23-200102-23-2001. . .

```

At 3 a.m.:

```

[24]=0
[00]=217[01]=352[02]=228[03]=313[04]=156. . .
Mid-1 am1-2 a.m.2-3 a.m.3-4 a.m.4-5 a.m.. . .
02-24-200102-24-200102-24-200102-24-200102-23-2001. . .

```

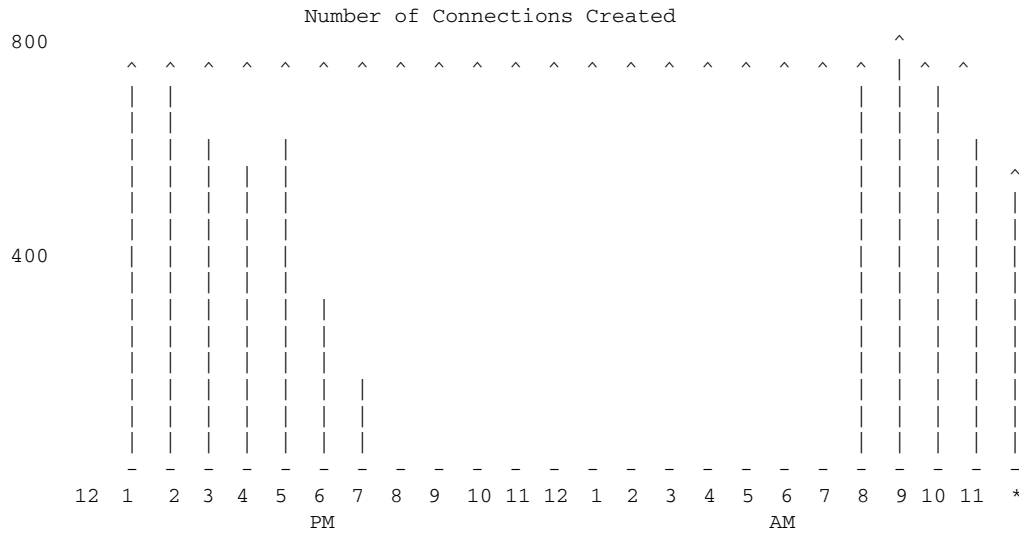
**Examples**

The following command displays all the statistics relating to communications with DB2:

```
Router# show dbconn statistic name dump
```

The following example shows the **connectionsup** statistic in histogram format.

```
Router# show dbconn statistic kind histogram name connectionsup
```



The following example shows the **connectionsup** statistic in the default summary format.

```
Router# show dbconn statistic name connectionsup
```

Number of Connections Created			
---hour---	yesterday ----PM----	today ----AM----	today ----PM----
12:00-12:59	0	0	536 *
01:00-01:59	726	0	
02:00-02:59	718	0	
03:00-03:59	597	0	
04:00-04:59	549	0	
05:00-05:59	607	0	
06:00-06:59	298	0	
07:00-07:59	162	5	
08:00-08:59	3	704	
09:00-09:59	0	817	
10:00-10:59	0	725	
11:00-11:59	0	598	

24-hour total: 5636 (excludes hour in progress \*)

**Related Commands**

Command	Description
clear dbconn statistic	Clears statistics related to CTRC communications with DB2.

# show dbconn wlm

To display information about a Cisco Transaction Connection (CTRC) server that is configured to use Workload Manager for DATABASE2 (DB2) communications, use the **show dbconn wlm** command in user EXEC or privileged EXEC mode.

**show dbconn wlm** *server-name*

## Syntax Description

<i>server-name</i>	Name of the CTRC server that is configured to use Workload Manager to manage DB2 communications.
--------------------	--

## Defaults

No default behavior or values

## Command Modes

EXEC

## Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	This command moved from the Cisco Database Connection (CDBC) feature to the Cisco Transaction Connection (CTRC) feature.

## Examples

The following is sample output from the **show dbconn wlm** command for a TCP/IP-enabled DB2 server:

```
Router# show dbconn wlm
IP          Port      Weight  Hits
10.147.235.2  500      251     90
10.147.235.2  501      182     64
10.147.235.2  502      29       0
```

Following is sample output from the **show dbconn wlm** command for a DB2 server in a Systems Network Architecture (SNA) network:

```
Router# show dbconn wlm

RLU          Weight  Hits
STARW.DSNV510  500    230
```

As each connection is established with DB2, CTRC obtains information from the Workload Manager subsystem to calculate the best route to use for the next connection. The fastest and most available connection is assigned the highest weight, and the Hits column shows how many times CTRC has used that route.

## Related Commands

Command	Description
<b>show dbconn connection</b>	Displays the status of CTRC connections to DB2.
<b>show dbconn ports</b>	Displays information about CTRC ports used for DB2 communications.

# show dlsw capabilities

To display the configuration of a specific peer or all peers, use the **show dlsw capabilities** command in privileged EXEC mode.

**show dlsw capabilities** [**interface** *type number* | **ip-address** *ip-address* | **local**]

Syntax Description		
<b>interface</b> <i>type number</i>	(Optional)	Specifies the interface type and number for which the data-link switching plus (DLSw+) capabilities are to be displayed.
<b>ip-address</b> <i>ip-address</i>	(Optional)	Specifies a peer by its IP address.
<b>local</b>	(Optional)	Specifies the local DLSw+ peer.

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.3	This command was introduced.

**Examples** The following is sample output from the **show dlsw capabilities** command:

```
Router# show dlsw capabilities

DLSw: Capabilities for peer 10.1.1.6(2065)
  vendor id (OUI)       : '00C' (cisco)
  version number       : 1
  release number       : 0
  init pacing window   : 20
  unsupported saps     : none
  num of tcp sessions  : 1
  loop prevent support : no
  icanreach mac-exclusive : no
  icanreach netbios-excl. : no
  reachable mac addresses : none
  reachable netbios names : none
  cisco version number : 1
  peer group number    : 0
  border peer capable  : no
  peer cost            : 3
  biu-segment configured : no
  UDP Unicast support  : yes
  local-ack configured : yes
  priority configured  : no
  configured ip address : 1.1.1.6
  peer type            : conf
  version string       :
```

Cisco Internetwork Operating System Software  
 IOS (tm) RSP Software (RSP-JSV-M), Version 11.3(4), RELEASE SOFTWARE (fc1)  
 Copyright (c) 1986-1998 by cisco Systems, Inc.  
 Compiled Tue 16-Jun-98 04:29 by phanguye

Table 13 describes the fields shown in the display.

**Table 13** *show dlsw capabilities Field Descriptions*

Field	Description
vendor id (OUI)	Vendor ID.
version number	RFC 1795 version of the Sequenced Packet Protocol (SSP) protocol.
release number	RFC 1795 release of the SSP protocol
init pacing window	Initial pacing window.
unsupported saps	Unsupported service access point (SAP)s.
num of tcp sessions	Number of TCP sessions.
loop prevent support	No loop prevent support.
icanreach mac-exclusive	Configured MAC addresses that the router can reach.
icanreach netbios-excl.	Configured NetBIOS names that the router can reach.
reachable mac addresses	Reachable MAC addresses.
reachable netbios name	Reachable NetBIOS names.
cisco version number	Cisco version number.
peer group number	Peer group member number.
border peer capable	Border peer capability.
peer cost	Peer cost.
biu-segment configured	Basic information unit (BIU) segment configured.
UDP Unicast support	User Datagram Protocol (UDP) unicast support.
local-ack configured	Local acknowledgment capable.
priority configured	Priority capability.
configured ip address	Configured IP address.
peer type	Peer type can be peer-on-demand or promiscuous.
version string	Cisco IOS software version information.

# show dlsw circuits

To display the state of all circuits involving this MAC address as a source and destination, use the **show dlsw circuits** command in privileged EXEC mode.

**show dlsw circuits** [**detail**] [**mac-address** *address* | **sap-value** *value* | *circuit-id*]

Syntax Description	detail	(Optional) Display circuit state information in expanded format.
	<b>mac-address</b> <i>address</i>	(Optional) Specifies the MAC address to be used in the circuit search.
	<b>sap-value</b> <i>value</i>	(Optional) Specifies the service access point (SAP) to be used in the circuit search.
	<i>circuit-id</i>	(Optional) Specifies the circuit ID of the circuit index. The valid range is 0 to 4294967295.

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.3	This command was introduced.

**Examples** The following is sample output from the **show dlsw circuits** command:

```
Router# show dlsw circuits

Index          local addr(lsap)    remote addr(dsap)  state          uptime
4060086272    4000.0000.0056(F0)  4001.0000.0049(F0) CONNECTED      00:00:13
Total number of circuits connected: 1
```

The following is sample output from the **show dlsw circuits** command with the **detail** argument:

```
Router# show dlsw circuits detail

Index  local addr(lsap)    remote addr(dsap)  state uptime
194 0800.5a9b.b3b2(F0)  800.5ac1.302d(F0)  CONNECTED 00:00:13
      PCEP: 995AA4      UCEP: A52274
      Port: To0/0      peer 172.18.15.166(2065)
      Flow-Control-Tx SQ CW:20, Permitted:28; Rx CW:22, Granted:25 Op:
IWO
      Congestion: LOW(02), Flow Op: Half: 12/5 Reset 1/0
      RIF = 0680.0011.0640
```

Table 14 describes the fields shown in the display.

**Table 14** *show dlsw circuits Field Descriptions*

Field	Description
Index	Number the software uses to reference an individual circuit.
local addr(lsap)	MAC address and SAP value used by end station closest to this data-link switching plus (DLSw+) peer.
remote addr(dsap)	MAC address and SAP value used by end station that is across the peer connection (remote).
state	Indicates whether circuit has completed establishment.
uptime	Length of time a circuit has been connected.
Total number of circuits connected	Number of total connected circuits. If a circuit has not completed connection, it will not show a value.
PCEP, UCEP	Internal correlators used as labels for communication internal to the router between DLSw+ and Logical Link Control, type 2 (LLC2), Synchronous Data Link Control (SDLC), or Qualified Logical Link Control (QLLC).
Port	Local port over which this circuit has been established or DLSw interface to the bridge group.
Flow Control (Tx and Rx)	Reports DSLw+ flow control windows as described in Section 8 of RFC 1795.
SQ	Two flags indicating congestion toward the remote peer. These flags are displayed only when the circuit is congested.
S	Data flow from the local station has been stopped. This results in LLC2 or SDLC sending Receiver Not Ready (RNR) frames.
Q	Data frames are being queued for transport to the remote peer.
CW	Current pacing window. See RFC 1795.
Permitted	Packet counter for tx. See RFC 1795.
Granted	Packet counter for rx. See RFC 1795.
Op	Next flow indicator (FCI) that will be sent to the remote peer. See RFC 1795.
Congestion	Data flow indicator from router to station is congested. Values are Low, Medium, High, and Max.
Flow Op	Amount of Reset Window Operator and Half Window Operator being sent or received. See RFC 1795.
RIF	Routing Information Field used over the local port for data traversing this circuit (if appropriate).

# show dlsw local-circuit

To display the state of all locally-switched DLSw+ circuits, use the **show dlsw local-circuit** privileged EXEC command.

**show dlsw local-circuit** [**mac-address** *address* | **sap-value** *value* | *circuit-id*]

Syntax Description	mac-address <i>address</i>	(Optional) Specifies the MAC address to be used in the circuit search.
	<b>sap-value</b> <i>value</i>	(Optional) Specifies the SAP to be used in the circuit search.
	<i>circuit-id</i>	(Optional) Specifies the circuit ID of the circuit index. The valid range is 0 to 4294967295.

**Defaults** No default behavior or values.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.1	This command was introduced.

**Examples** The following is sample output from the **show dlsw local-circuit** command:

```
Router# show dlsw local-circuit

~ key          mac-addr      sap    state      port      rif
34886696      4000.1111.22c1 04    CONNECTED  Se2/0     --no rif--
~              PCEP: 2145198 UCEP: 2145428
~              4000.3745.0001 04    CONNECTED  DL0       --no rif--
~              PCEP: 2176C90 UCEP: 2145428
```

Table 14 describes significant fields shown in the display

**Table 15** *show dlsw local-circuit Field Descriptions*

Field	Description
mac-addr	MAC address of the remote peer connection.
SAP	SAP value used by the remote peer.
state	Indicates whether circuit has completed establishment.
Port	Local port over which this circuit has been established or DLSw interface to the bridge group.
RIF	Routing Information Field used over the local port for data traversing this circuit (if appropriate).
PCEP, UCEP	Internal correlators used as labels for communication internal to the router between DLSw+ and LLC2, SDLC, or QLLC.

# show dlsw fastcache

To display the fast cache for Fast Sequenced Transport (FST) and direct-encapsulated peers, use the **show dlsw fastcache** command in privileged EXEC mode.

**show dlsw fastcache**

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

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Examples** The following is sample output from the **show dlsw fastcache** command with an FST peer:

```
Router# show dlsw fastcache

      peer                local-mac      remote-mac  l/r sap rif
FST 10.2.32.1           0800.5a8f.881c 0800.5a8f.8822 04/04 0680.02D5.1360
```

The following is sample output from the **show dlsw fastcache** command:

```
Router# show dlsw fastcache

      peer                local-mac      remote-mac  l/r sap rif
IF Se1 0800.5a8f.881c 0800.5a8f.8822 F0/F0 0680.02D5.1360
```

[Table 16](#) describes the fields shown in the display.

**Table 16** *show dlsw fastcache Field Descriptions*

Field	Description
peer	Peer in which the router is connected. Could represent either an IP address or interface.
local-mac	Local MAC address.
remote-mac	Remote MAC address.
l/r sap	Local or remote service access point (SAP) value.
rif	Routing Information Field (RIF) value.



```

Normal priority CONNECT      0      0 conf      0      -      0 00:00:58
Low priority   CONNECT      0     39 conf      0      -      0 00:00:58
Total number of connected peers: 2
Total number of connections:   8

```

The following is sample output from the **show dlsw peers** command with a Direct Frame Relay connection:

Router # **show dlsw peers**

```

Peers:                state  pkts_rx pkts_tx  type  drops ckts TCP   uptime
IF          SE1 16
      connect          53
      conf              0
-          -          00:04:09
Total number of connected peers: 2
Total number of connections:   8

```

The following is sample output from the **show dlsw peers** command with a Direct Frame Relay with local acknowledgment (LLC2) connection:

Router # **show dlsw peers**

```

Peers:                state  pkts_rx pkts_tx  type  drops ckts TCP   uptime
LLC2 SE116
1179                connect          108
0 1          -          -
Total number of connected peers: 2
Total number of connections:   8

```

The following is sample output from the **show dlsw peers ssp-dlx** command:

Router # **show dlsw peers ssp-dlx**

```

Peer:10.1.1.6                received transmitted
CUR_ex Can U Reach Explorers          5          2
CUR_cs Can U Reach Circuit Start       2          5
ICR_ex I Can Reach Explorers          4          5
ICR_cs I Can Reach Circuit Start       4          1
ACK Reach Acknowledgement             1          4
XID Frame                             22         20
CONQ Contact Remote Station            4          0
CONR Remote Station Contacted          0          4
INFO Information (I) Frame             39         39
HLTQ Halt Data Link                    0          1
HLTR Data Link Halted                  1          0
HLTN Halt Data Link (no ack)           1          2
CAPX Capabilities Exchange             2          2
Total SSP Primitives                   85         85

DLX Peer Test Request                  122        146
DLX Peer Test Response                  146        122
DLX Border to Border Message            53          9
--> SSP:CUR Can U Reach                 53          2
--> SSP:DATA Data Frames                 0           7

Last SSP Received: INFO
Last SSP Sent: ICR

Total number of connected peers:1
Total number of connections:   1

```

Table 17 describes the significant fields shown in the display.

**Table 17** *show dlsw peers Field Descriptions*

Field	Description
Peers	Information related to the remote peer, including encapsulation type, IP address (if using Fast Sequenced Transport [FST] or TCP) and interface number (if using direct encapsulation).
tot-Q'd	Number of UDP packets that have been queued because of TCP congestion.
total-rx	Number UDP packets received from the peer.
total-tx	Number of UDP packets sent to the peer.
tot-retx	Number of reachability resends (for example, DLSw+ retries NQ_ex and CUR_ex) when originally sent via UDP.
tot-drop	Number of queued UDP packets that were dropped because of persistent TCP congestion.
curr-Q'd	Number of current UDP packets queued because of TCP congestion.
TCP	Number of packets on the TCP output queue.
state	State of the peer: <ul style="list-style-type: none"> <li>• CONNECT—normal working peer.</li> <li>• DISCONN—peer is not connected.</li> <li>• CAP_EXG—capabilities exchange mode. Waiting for capabilities response.</li> <li>• WAIT_RD—TCP write pipe (local port 2065) is open and peer is waiting for remote peer to open the read port (local port 2067). This field applies only to TCP peers.</li> <li>• WAN_BUSY—TCP outbound queue is full. This field applies only to TCP peers.</li> </ul>
pkts_rx	Number of received packets.
pkts_tx	Number of sent packets.
type	Type of remote peer: <ul style="list-style-type: none"> <li>• conf—configured</li> <li>• prom—promiscuous</li> <li>• pod—peer on demand</li> </ul>

**Table 17** *show dlsw peers Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
drops	Number of drops done by this peer. Reasons for the counter to increment: <ul style="list-style-type: none"> <li>• WAN interface not up for a direct peer.</li> <li>• DLS tries to send a packet before the peer is fully connected (waiting for TCP event or capabilities event).</li> <li>• Outbound TCP queue full.</li> <li>• FST sequence number count mismatch.</li> <li>• Cannot get buffer to “slow switch” FST packet.</li> <li>• CiscoBus controller failure on high end (cannot move packet from receive buffer to send buffer, or vice versa).</li> <li>• Destination IP address of FST packet does not match local peer ID.</li> <li>• WAN interface not up for an FST peer.</li> <li>• No source-route bridging (SRB) route cache command configured.</li> <li>• Madge ring buffer is full on low-end systems (WAN feeding LAN too fast).</li> </ul>
ckts	Number of active circuits through this peer. This field applies only to TCP and LLC2 transport peer types.
uptime	How long the connection has been established to this peer.
total number of connected peers	Total number of connected peers.
total number of connections	Total number of active circuit connections.

# show dlsw reachability

To display data-link switching plus (DLSw+) reachability information, use the **show dlsw reachability** command in privileged EXEC mode.

```
show dlsw reachability [group value] | local | remote | mac-address [address] | netbios-names [name]]
```

Syntax Description		
<b>group</b>	(Optional)	Displays contents of group reachability cache only.
<i>value</i>	(Optional)	Specifies the group number for the reachability check. Only displays group cache entries for the specified group. The valid range is from 1 to 255.
<b>local</b>	(Optional)	Displays contents of local reachability cache only.
<b>remote</b>	(Optional)	Displays contents of remote reachability cache only.
<b>mac-address</b>	(Optional)	Displays DLSw reachability for MAC addresses only.
<i>address</i>	(Optional)	Specifies the MAC address for which to search in the reachability cache.
<b>netbios-names</b>	(Optional)	Displays DLSw reachability for NetBIOS names only.
<i>name</i>	(Optional)	Specifies the NetBIOS name for which to search in the reachability cache.

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** If none of the group, local, or remote options is specified, then the caches will be displayed in the following order: local, remote, and group.

**Examples** The following is sample output from the **show dlsw reachability group** command:

```
Router# show dlsw reachability group

DLSw Group MAC address reachability cache list
Mac Addr Group
0000.3072.1070 10
DLSw Group NetBIOS Name reachability cache list
NetBIOS Name Group
```

The following is sample output from the **show dlsw reachability** command:

```
Router# show dlsw reachability

DLSw MAC address reachability cache list
Mac Addr      status      Loc.      peer/port      rif
0000.f641.91e8 SEARCHING  LOCAL
0006.7c9a.7a48 FOUND      LOCAL    TokenRing0/0  0CB0.0011.3E71.A041.0DE5.0640
0800.5a4b.1cbc SEARCHING  LOCAL
0800.5a54.ee59 SEARCHING  LOCAL
0800.5a8f.9c3f FOUND      LOCAL    TokenRing0/0  08B0.A041.0DE5.0640
4000.0000.0050 FOUND      LOCAL    TokenRing0/0  0CB0.0011.3E71.A041.0DE5.0640
4000.0000.0306 FOUND      LOCAL    TokenRing0/0  0CB0.0011.3E71.A041.0DE5.0640
4000.0000.0307 SEARCHING  LOCAL
4000.0000.0308 SEARCHING  LOCAL
4000.1234.56c1 FOUND      LOCAL    Serial3/7     --no rif--
4000.1234.56c2 FOUND      LOCAL    Serial3/7     --no rif--
4000.3000.0100 FOUND      LOCAL    TokenRing0/0  08B0.A041.0DE5.0640
4000.4000.ff40 SEARCHING  LOCAL
4000.7470.00e7 SEARCHING  LOCAL
4000.ac0b.0001 FOUND      LOCAL    TokenRing0/0  08B0.A041.0DE5.0640
4001.0000.0064 FOUND      LOCAL    TokenRing0/0  0CB0.0011.3E71.A041.0DE5.0640
4001.3745.1088 FOUND      LOCAL    TokenRing0/0  08B0.A041.0DE5.0640
4100.0131.1030 FOUND      LOCAL    TokenRing0/0
10B0.FFF1.4041.0041.3E71.A041.0DE5.0640

DLSw NetBIOS Name reachability cache list
NetBIOS Name  status      Loc.      peer/port      rif
APPNCLT2      FOUND      LOCAL    TokenRing0/0  08B0.A041.0DE5.0640
```

The following is sample output from the **show dlsw reachability** command with the **mac-address** keyword:

```
Router# show dlsw reachability mac-address 4000.00000306

DLSw MAC address reachability cache list
Mac Addr      status      Loc.      peer/port      rif
4000.0000.0306 FOUND      LOCAL    TokenRing0/0  0CB0.0011.3E71.A041.0DE5.0640
```

The following is sample output from the **show dlsw reachability** command with the **netbios-names** keyword:

```
Router# show dlsw reachability netbios-names

DLSw NetBIOS Name reachability cache list
NetBIOS Name  status      Loc.      peer/port      rif
APPNCLT2      FOUND      LOCAL    TokenRing0/0  08B0.A041.0DE5.0640
```

Table 18 describes the significant fields shown in the display.

**Table 18** show dlsw reachability Field Descriptions

Field	Description
Mac Addr	MAC address of station being sought (destination MAC address of canureach_ex packet).
NetBIOS Name	NetBIOS name of station being sought (destination MAC address of NQ_ex packet).

**Table 18** *show dls w reachability Field Descriptions (continued)*

Field	Description
status	Result of station search. The status can be one of the following: <ul style="list-style-type: none"> <li>• FOUND—Station has recently sent a broadcast or responded to a broadcast.</li> <li>• SEARCHING—Router has sent a broadcast to this station and is waiting for a response.</li> <li>• NOT_FOUND—Negative caching is on, and the station has not responded to queries.</li> <li>• UNCONFIRMED—Station is configured, but DLSw has not verified it.</li> <li>• VERIFY—Cache information is being verified because cache is going stale, or the user configuration is being verified.</li> </ul>
Loc.	Location of station. LOCAL indicates that the station is on the local network. REMOTE indicates that the station is on the remote network.
peer/port	Peer/port number. If the Loc. field lists a REMOTE station, the peer/port field indicates the peer through which the remote station is reachable. If the Loc. field lists a LOCAL station, the peer/port field indicates the port through which the local station is reachable. For ports, the port number and slot number are given. Pxxx-Syyy denotes port xxx slot yyy. If the station is reachable through a bridge group, that is shown by TBridge-xxx.
rif	Displays the Routing Information Field (RIF) in the cache. This column applies only to LOCAL stations. If the station was reached through a medium that does not support RIFs (such as Synchronous Data Link Control [SDLC] or Ethernet) then "--no rif--" is shown.

# show dlsw statistics

To display the number of frames that have been processed in the local, remote, and group cache, use the **show dlsw statistics** command in privileged EXEC mode.

**show dlsw statistics [border-peers]**

<b>Syntax Description</b>	<b>border-peers</b> (Optional) Displays the number of frames processed in the local, remote, and group caches.
---------------------------	--

<b>Defaults</b>	No default behavior or values
-----------------	-------------------------------

<b>Command Modes</b>	Privileged EXEC
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.2 F	This command was introduced.

**Examples** The following is sample output from the **show dlsw statistics** command. The output displays the number of frames processed in the local, remote, and group cache.

```
Router# show dlsw statistics border-peers

100 Border Peer Frames processed
10 Border frames found Local
20 Border frames found Remote
17 Border frames found Group Cache
```

# show dlsw transparent cache

To display the master circuit cache for each transparent bridged domain, use the **show dlsw transparent cache** command in privileged EXEC mode.

## show dlsw transparent cache

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

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.0(5)T	This command was introduced.

**Usage Guidelines** Issue the **show dlsw transparent cache** command on the master router of the transparent bridged domain.

**Examples** The following is sample output from the **show dlsw transparent cache** command:

```
Router# show dlsw transparent cache

Interface Ethernet0/1
  Circuit Cache
  local addr(lsap)    remote addr(dsap)  state           Owner
  0000.3028.92b6(08)  0007.0db1.238c(08)  POSITIVE        SELF
  0000.3028.92b6(08)  0008.dec3.609e(12)  NEGATIVE        0009.fa50.0b1c
Total number of circuits in the Cache:2
```

# show dlsw transparent map

To display MAC address mappings on the local router and any mappings for which the local router is acting as backup for a neighbor peer, use the **show dlsw transparent map** command in privileged EXEC mode.

## show dlsw transparent map

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

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.0(5)T	This command was introduced.

**Usage Guidelines** Issue the **show dlsw transparent map** command to ensure that the local MAC address is the address created in the **dlsw transparent map** command. The command should be issued on all the routers configured for the Ethernet Redundancy feature to ensure the local MAC addresses match.

**Examples** The following is sample output from the **show dlsw transparent map** command on two routers configured for the Ethernet Redundancy feature:

```
Router6# show dlsw transparent map

Interface Ethernet6/2
  LOCAL Mac          REMOTE MAC          BACKUP
  -----
  0008.dec3.0080     0008.dec3.609e     0007.7fb0.1080     STATIC
  0008.dec3.0040     0008.dec3.609e     0007.7fb0.1080     DYNAMIC(Passive)

Router7# show dlsw transparent map

Interface Ethernet0/1
  LOCAL Mac          REMOTE MAC          BACKUP
  -----
  0008.dec3.0080     0008.dec3.609e     0006.3a0a.1a55     DYNAMIC(Passive)
  0008.dec3.0040     0008.dec3.609e     0006.3a0a.1a55     STATIC
```

The output from Router 6 and Router 7 shows the created MAC addresses are 0008.dec3.0080 and 0008.dec3.0040.

# show dlsw transparent neighbor

To display data-link switching plus (DLSw) neighbors in a transparent bridged domain, use the **show dlsw transparent neighbor** command in privileged EXEC mode.

**show dlsw transparent neighbor**

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

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.0(5)T	This command was introduced.

**Examples** The following is sample output from the **show dlsw transparent neighbor** command:

```
Router# show dlsw transparent neighbor

Interface ATM0.1
0006.e278.6c0e SELF Master
0009.fa50.0b1c Rcvd Master-Accepted VALID
```

The output shows that Router 7 is the master router whose MAC address is 0006.e278.6c0e. The other router, with a MAC address of 0009.fa50.0b1c, is a slave router on the common domain. The master router received a packet from the slave and notes the router is VALID.

# show dspu

To display the status of the downstream physical unit (DSPU) feature, use the **show dspu** command in privileged EXEC mode.

**show dspu** [**pool** *pool-name* | **pu** {*host-name* | *pu-name*}] [**all**]

Syntax Description	
<b>pool</b> <i>pool-name</i>	(Optional) Name of a pool of logical unit (LU)s (as defined by the <b>dspu pool</b> command).
<b>pu</b>	(Optional) Name of defined physical unit (PU) (as defined by either the <b>dspu pu</b> or the <b>dspu host</b> command).
<i>host-name</i>	Name of a host defined in a <b>dspu host</b> command.
<i>pu-name</i>	Name of a PU defined in a <b>dspu pu</b> command.
<b>all</b>	(Optional) Displays a detailed status.

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.3	This command was introduced.

**Examples** The following is sample output from the **show dspu** command. It shows a summary of the DSPU status.

```
Router# show dspu

dspu host HOST_NAMEA interface PU STATUS ssssssss
FRAMES RECEIVED nnnnnn FRAMES SENT nnnnnn
LUs USED BY DSPU nnn LUs ACTIVE nnn
LUs USED BY API nnn LUs ACTIVE nnn
LUs ACTIVATED BY HOST BUT NOT USED nnn
dspu host HOST_NAMEB interface PU STATUS ssssssss
FRAMES RECEIVED nnnnnn FRAMES SENT nnnnnn
LUs USED BY DSPU nnn LUs ACTIVE nnn
LUs USED BY API nnn LUs ACTIVE nnn
LUs ACTIVATED BY HOST BUT NOT USED nnn
dspu pu PU_NAMEE interface PU STATUS ssssssss
FRAMES RECEIVED nnnnnn FRAMES SENT nnnnnn
LUs USED BY DSPU nnn LUs ACTIVE nnn
LUs USED BY API nnn LUs ACTIVE nnn
LUs ACTIVATED BY HOST BUT NOT USED nnn
dspu pu PU_NAMEF interface PU STATUS ssssssss
FRAMES RECEIVED nnnnnn FRAMES SENT nnnnnn
LUs USED BY DSPU nnn LUs ACTIVE nnn
LUs USED BY API nnn LUs ACTIVE nnn
LUs ACTIVATED BY HOST BUT NOT USED nnn
```

The following is sample output from the **show dspu** command with the **pu** keyword:

```
Router# show dspu pu putest

dspu pu PUTEST interface PU STATUS ssssssss
RMAC remote_mac RSAP remote_sap LSAP local_sap
XID xid RETRIES retry_count RETRY_TIMEOUT retry_timeout
WINDOW window_size MAXIFRAME max_iframe
FRAMES RECEIVED nnnnnn FRAMES SENT nnnnnn
LUs USED BY DSPU nnn LUs ACTIVE nnn
LUs USED BY API nnn LUs ACTIVE nnn
LUs ACTIVATED BY HOST BUT NOT USED nnn
```

The following is sample output from the **show dspu** command with the **all** keyword:

```
Router# show dspu pu putest all

dspu pu PUTEST interface PU STATUS ssssssss
RMAC remote_mac RSAP remote_sap LSAP local_sap
XID xid RETRIES retry_count RETRY_TIMEOUT retry_timeout
WINDOW window_size MAXIFRAME max_iframe
FRAMES RECEIVED nnnnnn FRAMES SENT nnnnnn
LU nnn PEER PU HOST_NAMEA PEER LU nnn STATUS tttttttt
    FRAMES RECEIVED nnnnnn FRAMES SENT nnnnnn
LU nnn PEER PU HOST_NAMEA PEER LU nnn STATUS tttttttt
    FRAMES RECEIVED nnnnnn, FRAMES SENT nnnnnn
LU nnn PEER PU HOST_NAMEB PEER LU nnn STATUS tttttttt
    FRAMES RECEIVED nnnnnn, FRAMES SENT nnnnnn
```

The following example shows a summary of the LUs in a pool:

```
Router# show dspu pool poolname

dspu pool poolname host HOST_NAMEA lu start-lu end-lu
```

The following example shows the details of all the LUs in a pool:

```
Router# show dspu pool poolname all

dspu pool poolname host HOST_NAMEA lu start-lu end-lu
DSPU POOL poolname INACTIVITY_TIMEOUT timeout-value
lu nnn host HOST_NAMEA peer lu nnn pu PU_NAMEF status tttttttt
lu nnn host HOST_NAMEA peer lu nnn pu PU_NAMEF status tttttttt
lu nnn host HOST_NAMEA peer lu nnn pu PU_NAMEF status tttttttt
```