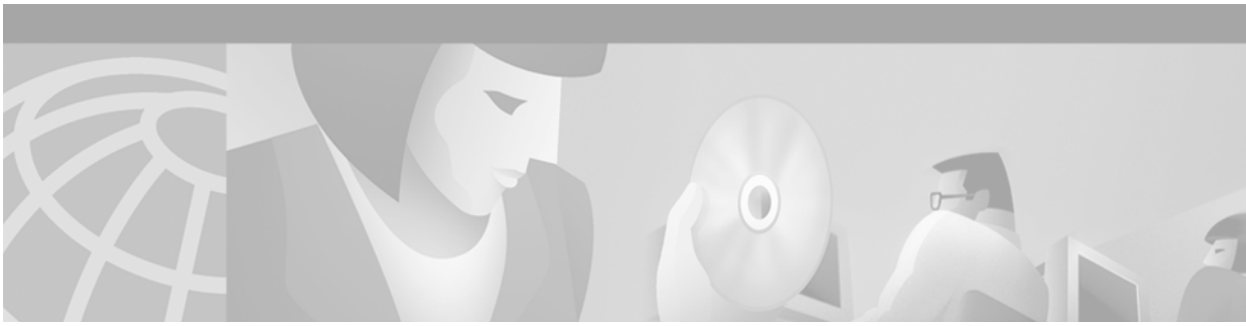


Cisco Transaction Connection Commands

Use the commands in this chapter to configure and monitor the Cisco Transaction Connection (CTRC) feature. Refer to the *Cisco IOS Debug Command Reference* for information about using debugging commands, including those available for CTRC. For CTRC configuration tasks and examples, refer to the "Configuring Cisco Transaction Connection" chapter of the *Cisco IOS Bridging and IBM Networking Configuration Guide*.

clear dbconn connection

To break a client connection to DB2, use the **clear dbconn connection** privileged EXEC command, specifying the ID of the connection you want to terminate.

clear dbconn connection *connection-id*

Syntax Description

connection-id	Identification number for client connection to DB2.

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example shows the client connection 786A7C being cleared:

```
clear dbconn connection 786A7C

Connection 786A7C cleared
```

Related Commands

Command	Description
show dbconn connection	Displays the status of CTRC connections to DB2.

clear dbconn statistic

To clear a specific statistic or all CTRC statistics concerning communications with DB2, use the **clear dbconn statistic** privileged EXEC command.

clear dbconn statistic {**chains** | **clientturnaround** | **connectionsdown** | **connectionsup** | **every** | **hostreceived** | **hostresponse** | **hostsent** | **maxconnections**}

Syntax Description

chains	Clears the number of command chains created between CTRC and DB2.
clientturnaround	Clears statistics for average time from receiving a DB2 client communication to sending that client a response.
connectionsdown	Clears statistics for number of connections down between CTRC and DB2.
connectionsup	Clears statistics for number of connections created between CTRC and DB2.
every	Clears the complete statistics dump between CTRC and DB2.
hostreceived	Clears statistics for number of bytes received from DB2 hosts.
hostresponse	Clears statistics for average DB2 host response time.
hostsent	Clears statistics for number of bytes sent to DB2 hosts.
maxconnections	Clears statistics for maximum number of concurrent connections to CICS clients.

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example clears the stored statistics for the number of bytes the current router has received from DB2 hosts:

```
clear dbconn statistic hostreceived
```

Related Commands

Command	Description
show dbconn statistic	Displays all CTRC statistics concerning communications with DB2.

clear txconn connection

To clear a CTRC connection to a CICS client and all associated transactions, use the **clear txconn connection** privileged EXEC command.

clear txconn connection *connection-id*

Syntax Description

connection-id	CICS connection identification number.

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example clears the specified CICS client connection number 62146088 and all its transactions:

```
clear txconn connection 62146088

% Connection 62146088 cleared
```

Related Commands

Command	Description
clear txconn transaction	Terminates a specified CICS transaction.
show txconn connection	Displays a list of all of the CTRC connections of the router to CICS clients.

clear txconn statistic

To clear a specific statistic or all CTRC statistics concerning communications with CICS, use the **clear txconn statistic** privileged EXEC command.

clear txconn statistic {**allocatetime** | **clientreceived** | **clientsent** | **clientturnaround** | **every** | **hostreceived** | **hostresponse** | **hostsent** | **maxconnections** | **maxtransactions** | **totalconnections** | **totaltransactions**}

Syntax Description

allocatetime	Clears statistics for average time spent waiting for APPC allocate operation to complete.
clientreceived	Clears statistics for number of bytes received from CICS clients.
clientsent	Clears statistics for number of bytes sent to CICS clients.
clientturnaround	Clears statistics for average time from receiving a CICS client communication to sending that client a response.
every	Clears every statistic concerning the current router's CTRC communications with CICS.
hostreceived	Clears statistics for number of bytes received from CICS hosts.
hostresponse	Clears statistics for average CICS host response time.
hostsent	Clears statistics for number of bytes sent to CICS hosts.
maxconnections	Clears statistics for maximum number of concurrent connections to CICS clients.
maxtransactions	Clears statistics for maximum number of concurrent transactions with CICS hosts.
totalconnections	Clears statistics for total number of connections to CICS clients.
totaltransactions	Clears statistics for total number of CICS transactions processed.

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example clears the stored statistics for the number of bytes the current router has received from CICS clients:

```
clear txconn statistic clientreceived
```

Related Commands

Command	Description
show txconn statistic	Displays information about the CTRC communications of the current router with CICS.

clear txconn transaction

To terminate a specified CICS transaction, use the **clear txconn transaction** privileged EXEC command. This command terminates the conversation with the host and returns DEALLOC_ABEND_PROG to the client.

clear txconn transaction *transaction-id*

Syntax Description

transaction-id	ID of the CICS transaction to be cleared.

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example clears the CICS transaction number 621FC8E0:

```
clear txconn transaction 621FC8E0

% Transaction 621FC8E0 cleared
```

Related Commands

Command	Description
clear txconn connection	Clears a CTRC connection to a CICS client and all associated transactions.
show txconn transaction	Displays a list of all the CTRC transactions of the current router with CICS, transactions of a specified CTRC server, or transactions of a specified CICS client connection.

dbconn license

To configure client licenses for CTRC connections to DB2 or CICS, use the **dbconn license** global configuration command. To remove the licenses, use the **no** form of this command in privileged EXEC mode.

dbconn license *license-key* **connections** *licensed-connections* **expiration-date** *yyyymmdd*

no dbconn license

Syntax Description

license-key	License key obtained from your Cisco representative. The license key is a 32-character hexadecimal string that specifies the maximum number of CICS conversations or DB2 connections allowed for the CTRC router. The license key is generated for a specific router, and is based on the SNA Switching Services cpname for the router. Use the **show config | include cpname** command to view the cpname so you can provide it when you request the license key.
connections *licensed-connections*	Number of licensed connections. If the license is for an unlimited number of connections, omit the **connections** parameter.
expiration-date *yyyymmdd*	Date when a temporary license key expires, where *yyyy* is the year expressed in four digits, *mm* is the month expressed in two digits, and *dd* is the date expressed in two digits. If the license is for an unlimited time period (permanent license), omit the **expiration-date** parameter.

Defaults

If the number of licensed connections is not specified, the license key must allow an unlimited number of licensed connections. If the expiration date is not specified, the license key must be for a permanent license.

Command Modes

Global configuration

Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Usage Guidelines

Licenses are required for all CTRC installations. For testing and evaluation purposes, unlicensed CTRC installations allow you to establish two connections to DB2, or two conversations to CICS, or one to each. One license key is used for both CICS and DB2 communications, so you can use either the **dbconn license** command or the **txconn license** command to configure the CTRC router.

Examples

The following example shows the configuration of a CTRC router with a license that allows up to 4000 connections until January 1, 2005:

```
dbconn license 3C09A051320BAF020BFF45B3A2FF21D2 connections 4000 expiration-date 20050101
```

Related Commands

Command	Description
show dbconn license	Displays the status of CTRC licenses for DB2 communications.
show snasw node	Displays details and statistics of the SNASw operation.
show txconn license	Displays the status of licenses used for CTRC.
txconn license	Licenses a Cisco router for CTRC communications with CICS or DB2.

dbconn pem

To configure password expiration management (PEM) support for connections to DB2, use the **dbconn pem** global configuration command. To remove PEM support, use the **no** form of this command.

dbconn pem server *server-name* **rlu** *rlu-name* **mode** *mode-name* [**tpname** *tp-name*]

no dbconn pem server *server-name*

Syntax Description

server *server-name*	Name of the CTRC server that you want to configure for password management.
rlu *rlu-name*	Host remote LU name the server connects to when performing password management. This RLU ordinarily differs from the RLU values used in **dbconn server** or **txconn destination** commands. It may or may not be fully qualified.
mode *mode-name*	APPC stack mode the server uses when performing password management.
tpname *tp-name*	(Optional) Name of the PEM transaction program on the host (the APPC Signon transaction program, an architected APPC TP). The default value is \x06301 (0x06F3F0F1 in EBCDIC).

Defaults

If *tp-name* is not specified, the default value is \x06301 (0x06F3F0F1 in EBCDIC).

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example shows the configuration of PEM support on a CTRC server named DB2BUDD:

```
dbconn pem DB2BUDD rlu MVSLU01 mode #INTER
```

Related Commands

Command	Description
show dbconn server	Displays information about CTRC servers configured for DB2 communications.

dbconn ping

To determine whether CTRC servers are successfully connecting to DB2 host databases, use the **dbconn ping** EXEC command.

dbconn ping *server-name* [**userid** *user-id*] [**password** *password*] [**rdbname** *rdbname*]

Syntax Description

server-name	Name of the CTRC server for DB2 communications.
userid *user-id*	(Optional) User ID used to connect to the DB2 system.
password *password*	(Optional) Password used to connect to the DB2 system.
rdbname *rdbname*	(Optional) Name of the relational database to be contacted.

Defaults

If no user ID is specified, the ping connection is made without APPC security. The DB2 system's security settings determine whether the ping can succeed.

If no *rdbname* is specified, the relational database name configured for the CTRC server is used.

Command Modes

EXEC

Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Usage Guidelines

This command can be used for CTRC servers that communicate with DB2 over either SNA or TCP/IP (dbconn servers and dbconn tcpservers). There is not a **no** form this command.

Examples

The following example illustrates using **dbconn ping** to verify the connection to the default database for the CTRC server BUDDY:

```
dbconn ping BUDDY

RDB named DB2510 on database server BUDDY successfully contacted!
Database server product id is QSQ03020, DB2 for OS/400 V3R2
Elapsed time was 00:00:00
```

Related Commands

Command	Description
show dbconn server	Displays information about CTRC servers configured for DB2 communications.
ping sna	Initiates an APPC session with a named destination LU to run the APING transaction program to check network integrity and timing characteristics.

dbconn server

To configure a CTRC server process for APPC communications with DB2, use the **dbconn server** global configuration command. To disable the server and remove its configuration, use the **no** form of this command.

dbconn server *server-name* [**idle-timeout** *minutes*] [**ipaddress** *ip-address*] [**keepalive attempts** *number*] [**keepalive interval** *seconds*] [**mode** *mode*] [**port** *port-number*] [**rdbname** *rdbname*] [**rlu** *remote-lu*] [**tpname** *tp-name*] [**window-size** *bytes*] [**wlm** {**off** | **on**}]

no dbconn server *server-name*

Syntax Description

server-name	Name of the CTRC server. Server names are user-defined strings up to 16 characters.
idle-timeout *idle-timeout*	(Optional) Time, in minutes, to wait for an idle client. If there is no activity from the client for this amount of time, the connection is forcibly broken. The time spent in waiting for a response from the DB2 system is not counted, only idle time in between client requests is counted. The maximum is 1440 minutes (24 hours). If no idle timeout is specified, the default is 0 (zero) for no timeout.
ipaddress *ip-address*	(Optional) IP address used by the CTRC server to receive a connection requesting DB2 communications. When a connection arrives, this IP address is used for matching and selecting the server from multiple configured servers. If you do not specify an IP address, the current server can handle DB2 connectivity requests sent to any IP address on the local router.
keepalive attempts *number*	(Optional) The number of times for the CTRC server to attempt sending an acknowledgment message to the client to keep the connection alive. You can specify 1 to 100 attempts, or 0 (zero) to disable the keepalive messages. The default is 3 attempts.
keepalive interval *seconds*	(Optional) The frequency for the CTRC server to send an acknowledgment message to the client to keep the connection alive. The interval can be from 1 to 3600 seconds, or 0 (zero) to disable the keepalive messages. The default is 120 seconds.
mode *mode*	(Optional) APPC mode used to allocate the conversation to the DB2 system. If no mode is specified, the default is #INTER. Performance might improve if you choose a mode such as IBMRDB. If you specify a mode that does not already exist, CTRC will create it.
port *port-number*	(Optional) Port used to listen for connections requesting DB2 communications. If no port is specified, the default is 446.
rdbname *rdbname*	(Optional) DB2 remote database name on the host. When a connection arrives, this name is used to identify and select the appropriate server from multiple configured servers. The string is used to match the RDB name sent by the client in the DRDA data stream at connect time. The default RDB name is an asterisk (*), which indicates that this CTRC server serves any remote database.

rlu *remote-lu*	(Optional) APPC remote LU used to allocate the connection to the DB2 system. An example is NETA.S103B345. If no remote LU is specified, the default is the configured server name which is set to uppercase and truncated to eight characters. An RLU need not be qualified with a NET ID. If you omit the NET ID, the NET ID of the router's SNA Switching Services control point is used to fully qualify the LU name.
tpname *tp-name*	(Optional) APPC remote transaction program name used to allocate the conversation to the DB2 system. If no TP name is specified the default is the architected DRDA TP name \x076DB.
window-size *bytes*	(Optional) TCP/IP receive window size. The maximum window size you can specify is 65,535 bytes, and the default is 4096 bytes.
wlm {**off** | **on**}	(Optional) Enables or disables Workload Manager load balancing. The default is "inactive-enabled."

Defaults

If you do not specify an idle timeout, client connections can continue regardless of how long they have been idle.

If you do not specify an IP address, the current server can handle DB2 connectivity requests sent to any IP address on the local router.

If you do not specify a keepalive attempt or a keepalive interval, the server makes up to three attempts to send an acknowledgment message every 120 seconds.

If you do not specify an APPC mode, the default value is #INTER. If you specify a mode that does not already exist, CTRC will create it.

If you do not specify a port number, the current server uses the default value of 446.

If you do not specify an rdbname, the server is configured to serve any remote database.

If you do not specify a remote LU, the default is the configured server name that is set to uppercase and truncated to eight characters. An RLU need not be qualified with a NET ID. If you omit the NET ID, the NET ID of the router's SNA Switching Services control point is used to fully qualify the LU name.

If you do not specify an APPC transaction program name, the default value is the architected DRDA TP name \x076DB.

If you do not specify a TCP receive window size, the default value is 4096 bytes.

The Workload Manager load balancing default is "inactive-enabled."

Command Modes

Global configuration

Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.
12.1(5)T	This command was enhanced to allow configuration of keepalive messages.

Usage Guidelines

You can configure more than one CTRC server per router for communications with DB2 or CICS. There is no limit on the number of CTRC servers. For each DB2 database system in your network, you can configure a CTRC server in the router configuration. Servers that are configured on the same router can share a port. CTRC txconn servers should use a different port.

Set **keepalive attempts** or **keepalive interval** to zero (0) to disable the keepalive messages.

Examples

The following example shows configuring a CTRC server named BUDDY to manage communications to a DB2 database named DB2510, using the IBMRDB APPC mode to allocate the conversation, and attempting five acknowledgment messages every 300 seconds:

```
dbconn server BUDDY rdbname DB2510 rlu STARW.BUDDY idle-timeout 20 keepalive attempts 5
keepalive interval 300 mode IBMRDB
```

Related Commands

Command	Description
clear dbconn connection	Breaks a client connection to DB2.
dbconn ping	Determines whether or not CTRC servers are successfully connecting to DB2 host databases.
show dbconn ports	Displays information about ports used for CTRC server communications to DB2.
show dbconn server	Displays information about CTRC servers configured for DB2 communications.
show snasw mode	Displays information about SNASw modes.

dbconn tcpserver

To configure a CTRC server process to communicate with IP-enabled DB2 databases, use the **dbconn tcpserver** global configuration command. To disable a server and remove its configuration, use the **no** form of this command.

dbconn tcpserver *server-name* [**idle-timeout** *minutes*] [**ip** *ip-address*] [**keepalive attempts** *number*] [**keepalive interval** *seconds*] [**port** *port-num*] [**rdbname** *rdbname*] **remote-hostname** *remote-hostname* **|** **remote-ip** *remote-ip-address* [**remote-keepalive attempts** *number*] [**remote-keepalive interval** *seconds*] [**remote-port** *remote-port*] [**window-size** *bytes*] [**wlm** {**off** | **on**}]

no dbconn tcpserver *server-name*

Syntax Description

server-name	Name of the CTRC server being configured for TCP passthrough communications with DB2.
idle-timeout *minutes*	(Optional) Time in minutes to wait for an idle client. If there is no activity from the client for this amount of time, the connection is forcibly broken. The time spent in waiting for a response from the DB2 system is not counted, only idle time in between client requests is counted. The maximum time is 1440 minutes (24 hours). If no idle timeout is specified, the default is 0 (zero) for no timeout.
ip *ip-address*	(Optional) IP address for the CTRC tcpserver process being configured. If not specified, the tcpserver receives client requests on all IP addresses configured for the router.
keepalive attempts *number*	(Optional) The number of times for the CTRC server to attempt sending an acknowledgment message to the client to keep the connection alive. You can specify 1 to 100 attempts, or 0 (zero) to disable the keepalive messages. The default is 3 attempts.
keepalive interval *seconds*	(Optional) The frequency for the CTRC server to send an acknowledgment message to the client to keep the connection alive. The interval can be from 1 to 3600 seconds, or 0 (zero) to disable the keepalive messages. The default is 120 seconds.
port *port-num*	(Optional) Port the tcpserver listens on for client requests. The default value is 446. A dbconn server and a dbconn tcpserver can share the same port.
rdbname *rdbname*	(Optional) DB2 remote database name on the host. When a connection arrives, this name is used to identify and select the appropriate tcpserver from multiple configured tcpservers. The string is used to match the RDB name sent by the client in the DRDA data stream at connect time. The default RDB name is an asterisk (*) which indicates that this CTRC tcpserver serves any remote database.
remote-hostname *remote-hostname* **|** **remote-ip** *remote-ip-address*	DNS host name of the remote database server to which you want to connect, or the IP address for the host where DB2 resides. You must specify either the name or the IP address of the host.
remote-keepalive attempts *number*	(Optional) The number of times for the CTRC server to attempt sending an acknowledgment message to the host to keep the connection alive. You can specify 1 to 100 attempts, or 0 (zero) to disable the keepalive messages. The default is 3 attempts.

remote-keepalive interval *seconds*	(Optional) The frequency for the CTRC server to send an acknowledgment message to the host to keep the connection alive. The interval can be from 1 to 3600 seconds, or 0 (zero) to disable the keepalive messages. The default is 120 seconds.
remote-port *remote-port*	(Optional) Host port that listens for tcpserver communications from the router. The default value is 446.
window-size *bytes*	(Optional) This value is used for the TCP/IP receive window size. If no window size is specified, the default is 4096 bytes.
wlm {**off** | **on**}	(Optional) Enables or disables Workload Manager load balancing. The default is "inactive-enabled."

Defaults

If you do not specify an idle timeout period, the default value is zero for no timeout.

If you do not specify an IP address for the tcpserver, it can receive requests on any IP address configured for the router.

If you do not specify a keepalive attempt or a keepalive interval, the server makes three attempts to send an acknowledgment message to the client every 120 seconds. If you do not specify a remote-keepalive attempt or a remote-keepalive interval, the server makes three attempts to send an acknowledgment message to the host ever 120 seconds.

If you do not specify a port for the tcpserver, the default port is 446.

If you do not specify a remote database name for the DB2 system, the tcpserver can communicate with any rdbname.

If you do not specify a port for the remote DB2 system, the tcpserver uses the default value of 446.

If you do not specify a TCP/IP receive window size, the default value is 4096 bytes.

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.
12.1(5)T	This command was enhanced to allow configuration of the keepalive interval.

Usage Guidelines

Configure a separate tcpserver for each DB2 system IP address. A dbconn server and a dbconn tcpserver can share the same port.

Examples

The following example shows configuring a tcpserver named BUDDTCP to manage connections to a DB2 database named DB2510, attempting up to five keepalive messages to the client and to the host every 300 seconds:

```
dbconn tcpserver BUDDTCP keepalive attempts 5 keepalive interval 300 port 446 rdbname
DB2510 remote-ip 198.147.235.39 remote-keepalive attempts 5 remote-keepalive interval 300
remote-port 446
```

Related Commands

Command	Description
dbconn ping	Determines whether or not CTRC servers are successfully connecting to DB2 host databases.
show dbconn server	Displays information about CTRC servers configured for DB2 communications.

show dbconn connection

To display the status of CTRC connections to DB2, use the **show dbconn connection** EXEC command.

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

Syntax Description

connection-id	(Optional) Displays the status of a specified connection.
server *server-name*	(Optional) Displays connection information for the specified server.
userid *user-id*	(Optional) Displays connections for the specified user ID.
rdbname *rdb-name*	(Optional) Displays connections for the specified RDB name.

Defaults

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

Command Modes

EXEC

Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

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      198.999.989.36  00:01:26  00:01:12
6127D34C BUDDY                       198.999.989.84  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: 198.147.235.2
                 local port: 500
          client ip-address: 198.999.989.84
                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 4 describes significant fields shown in the display.

Table 4 show dbconn connection Field Descriptions

Field	Description
connection id	Identification number of the connection made by a 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	Userid 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 when connection was made by the client to the CTRC server.
idle time	Amount of time 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 ODBC-DRDA driver or another DRDA driver.

Related Commands

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

show dbconn license

To display the status of CTRC licenses for DB2 communications, use the **show dbconn license** EXEC command.

show dbconn license

Syntax Description

This command has no arguments or keywords

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	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Usage Guidelines

This command produces the same results as the **show txconn license** command because CTRC licenses are shared between DB2 connections and 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
dbconn license	Configures client licenses for CTRC connections to DB2 or CICS.
show txconn license	Displays the status of licenses used for CTRC.
txconn license	Licenses a Cisco router for CTRC communications with CICS or DB2.

show dbconn ports

To display information about ports that CTRC is using for communications to DB2, use the **show dbconn ports** EXEC command.

show dbconn ports

Syntax Description

This command has no arguments or keywords.

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	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

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

```
Router> show dbconn ports

Port  State
446   listening
447   listening
```

Table 5 describes significant fields shown in the display.

Table 5 show dbconn ports Field Descriptions

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

Related Commands

Command	Description
show dbconn connection	Displays the status of CTRC connections to DB2.
show dbconn license	Displays the status of CTRC licenses for DB2 communications.
show dbconn server	Displays information about CTRC servers configured for DB2 communications.

show dbconn server

To display information about CTRC servers configured for DB2 communications, use the **show dbconn server** EXEC command.

show dbconn server [*server-name*]

Syntax Description

server-name	(Optional) Specific server for which information should be displayed. When 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

EXEC

Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

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         MATTY       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    198.989.999.32  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 6 describes significant fields shown in the display.

Table 6 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 SNA or TCPIP.
rlu	Remote SNA LU used when connecting to the database server.
mode	SNA mode used when connecting to the database.
tpname	SNA transaction program name used for 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 *none* until first contact.
database product id	Database product ID. Field shows *none* until first contact.
PEM rlu	The host remote LU name the server will connect to when performing password management.
PEM mode	The APPC mode the server will use when performing password management.
PEM tpname	The name of the PEM transaction program on the host (the APPC Signon transaction program, an architected APPC TP).
number of connections	Number of all ODBC clients currently connected to the CTRC server.

Table 6 show dbconn server Field Descriptions (continued)

Field	Description
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.

Related Commands

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

show dbconn statistic

To display all CTRC statistics concerning communications with DB2, use the **show dbconn statistic** privileged EXEC command.

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 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.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Usage Guidelines

Summary statistics are displayed by time period, where:

- [24] indicates statistics for the hour currently 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 am     1-2 a.m.     2-3 a.m.     3-4 a.m.     4-5 a.m.     . . .
02-24-2001   02-24-2001   02-24-2001   02-23-2001   02-23-2001   . . .
```

At 3 a.m.:

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

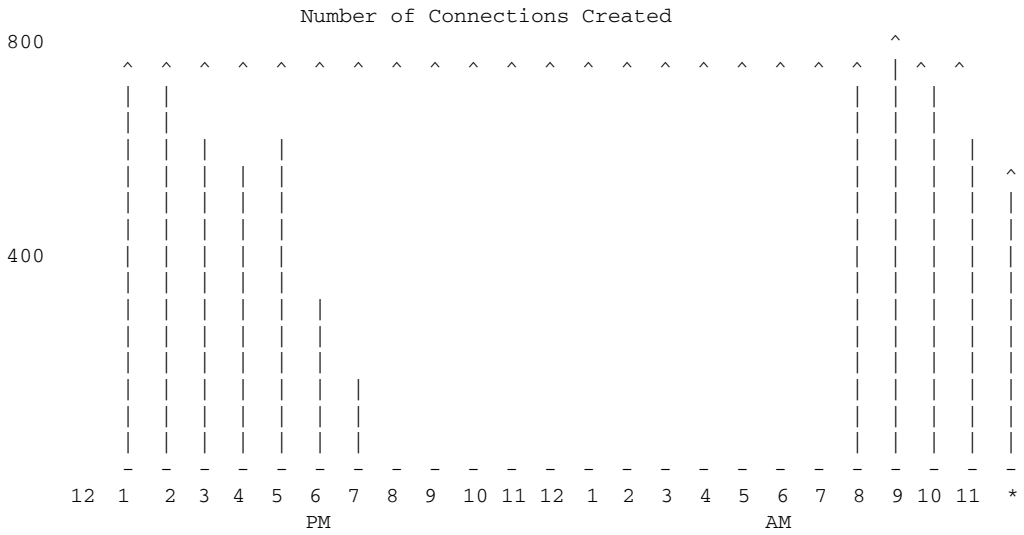
Examples

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
               yesterday       today         today
----hour---    ----PM----    ----AM----    ----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 CTRC server that is configured to use Workload Manager for DB2 communications, use the **show dbconn wlm** EXEC command.

show dbconn wlm *server-name*

Syntax Description

server-name	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	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

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

```
IP              Port     Weight  Hits
198.147.235.2   500       251     90
198.147.235.2   501       182     64
198.147.235.2   502        29      0
```

Following is sample output from the **show dbconn wlm** command for a DB2 server in an SNA network:

```
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
show dbconn connection	Displays the status of CTRC connections to DB2.
show dbconn ports	Displays information about CTRC ports used for DB2 communications.

show txconn connection

To display a list of all of the router's CTRC connections to CICS clients, a list of a specified CTRC server's connections to CICS clients, or detailed status information for a specific CTRC connection to a CICS client, use the **show txconn connection** EXEC command.

show txconn connection [*connection-id* | **server** *server-name*]

Syntax Description

connection-id	(Optional) Specifies a CTRC connection to a CICS client for which to display detailed status information.
server *server-name*	(Optional) Specifies a CTRC server for which to list connections to CICS clients.

Defaults

If neither *connection-id* nor *server-name* are specified, a list of all of the current router's CTRC connections to CICS clients is displayed.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example displays information about a CICS client connections for the current router:

```
Router> show txconn connection

Server           ConnID     State     #Transact. IP Address      Port  Bytes
---------------- ---------- --------- ---------- --------------- ----- --------
CICSB            6241464C   receiving 20         198.147.235.88  1365  2.89K
AMELIA           625443BC   receiving 0          198.147.235.88  1371  15.60K
```

The following example displays information about a specified CICS client connection:

```
Router> show txconn connection 6241464C
connection: 6241464C
server: CICSB
state: receiving
transactions: 2
ip address: 198.147.235.88
port: 1365
total transactions: 20
connect timestamp: 06:04:26
idle time: 06:17:34
total bytes received: 2963
total bytes sent: 28121 (2.89K)
idle timeout: 0 (none)
```

Table 7 describes significant fields shown in the display.

Table 7 show txconn connection Field Descriptions

Field	Description
connection	Unique identifier for the CICS client connection.
server	CTRC txconn server process that is handling the connection.
state	Status of the connection. Possible values are: • **closing** indicates that the connection is in the process of closing. • **halt** indicates that the connection has been manually cleared and is in the process of releasing resources. • **receiving** indicates that the connection is receiving data from the client. • **reset** indicates that the connection has just opened or just closed.
transaction	Number of CICS transactions currently in progress for the connection.
ip address	IP address of the CICS client that is using the connection.
port	Port of the CICS client that is using the connection.
total transactions	Total number of CICS transactions performed using the connection.
connect timestamp	Amount of time elapsed since the connection was first established. Values of less than 24 hours are displayed in hours, minutes, and seconds. Longer periods are displayed in days and hours.
idle time	Amount of time that the connection has been idle.
total bytes received	Number of bytes received from the CICS client via this connection.
total bytes sent	Number of bytes sent to the CICS client via this connection.
idle timeout	Number of minutes after which the connection will be automatically closed if there is no activity. A value of zero (0) indicates that the connection will not be closed for lack of activity.

Related Commands

Command	Description
clear txconn connection	Clears a CTRC connection to a CICS client, and all associated transactions.
show txconn transaction	Displays a list of all the CTRC transactions of the current router with CICS, transactions of a specified CTRC server, or transactions of a specified CICS client connection.

show txconn destination

To display a list of all of the current router's CICS destinations for CTRC, or to display detailed status information for a specified CTRC CICS destination, use the **show txconn destination** EXEC command.

show txconn destination [*destination-name*]

Syntax Description

destination-name	(Optional) CTRC destination for which to display detailed status information. A destination is defined by a unique remote LU and mode pair.

Defaults

If *destination-name* is omitted, a list of all CTRC destinations for the current router is displayed.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following examples show the CTRC destinations for CICS communications that are available on the current router and information specifically about the destination GEN:

```
Router> show txconn destination
Name              Remote LU          Mode        Hits
----------------- ------------------ ----------- --------
CICSB             CICSB              IBMRDB      31
GEN               CICSB              IBMRDB      50
                  CICSC              IBMRDB      51
GUAVA             GUAVA              IBMRDB      0
CICSC             CICSC              IBMRDB      7

Router> show txconn destination GEN
Name              Remote LU          Mode        Hits
----------------- ------------------ ----------- --------
GEN               CICSB              IBMRDB      50
                  CICSC              IBMRDB      51
```

The HITS column displays the number of times the router has routed transactions or pings to each destination since the last time the router was started up.

Related Commands

Command	Description
txconn destination	Configures CICS destinations for CTRC.

show txconn license

To show the status of licenses used for CTRC, use the **show txconn license** EXEC command.

show txconn license

Syntax Description

This command has no arguments or keywords.

Defaults

No default behavior or values.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Usage Guidelines

This command produces the same result as the **show dbconn license** command because CTRC licenses are shared between DB2 connections and CICS conversations.

Examples

The following is sample output for a CTRC router that is licensed to allow up to 4990 connections for an unlimited time period:

```
Router> show txconn license
CTRC is licensed for 4990 connections, 2850 licensed connections in use
 This is a permanent license
```

Related Commands

Command	Description
dbconn license	Configures CTRC licenses for connections to DB2 or CICS.
show dbconn license	Displays the status of CTRC licenses for DB2 communications.
txconn license	Configures CTRC licenses for connections to CICS or DB2.

show txconn route

To display a list of all CTRC routes defined for specified CICS transaction IDs, or to display a particular CTRC server's routes to CICS, use the **show txconn route** EXEC command.

show txconn route [**server** *server-name*]

Syntax Description

server *server-name*	(Optional) Server for which you wish to display routing information. If not specified, a list of all CICS communications routes for CTRC servers on the current router is displayed.

Defaults

If a value for the *server-name* argument is not specified, a list of all CICS communications routes for CTRC servers on the current router is displayed.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following examples show information about all the CTRC routes to CICS that are available on the current router and information about the route for CTRC server **CICSB&C**. A **<default>** entry in the SERVER column indicates a global route that is used by all txconn servers on the router. A **<default>** entry in the TranID column indicates the default route for the listed txconn server.

```
Router> show txconn route
Server             TranID             Destination
------------------ ------------------ ----------------
CICSC              <default>          CICSC
CICSB              <default>          CICSB
CICSB&C            <default>          GEN
GUAVA              <default>          GUAVA
<default>          CPMI               CICSC
CICSB              CPMI               CICSB

Router> show txconn route CICSB&C
Server             TranID             Destination
------------------ ------------------ ----------------
CICSB&C            <default>          GEN
```

Related Commands

Command	Description
txconn route	Configures CTRC routes to CICS for specified transaction IDs.

show txconn server

To display information about the current router's CTRC servers for CICS communications, or to display detailed status information for a single CTRC server, use the **show txconn server** EXEC command.

show txconn server [*server-name*]

Syntax Description

server-name	(Optional) CTRC server for which to display detailed status information. When omitted, a list of CTRC servers is displayed.

Defaults

When a value for the *server-name* argument is not specified, a list of the current router's CTRC servers that communicate with CICS is displayed.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example shows summary information about the CTRC servers for CICS communications that are available on the current router:

```
Router> show txconn server
Server    Port  IP Address   Dest       State    NumConn
--------- ----- ------------ ---------- -------- -------
AMELIA    1436  0.0.0.0      AMELIA     enabled  0
CICSB     1444  0.0.0.0      CICSB      enabled  0
CICSC     1434  0.0.0.0      CICSC      enabled  0
TEST      1446  0.0.0.0      CICSC      enabled  0
```

You can specify the name of a particular txconn server to display detailed information about it, as shown in the following example for the CTRC server named CICSB.

```
Router> show txconn server CICSB
                server: CICSB
           destination: CICSB
          server state: enabled (accepting connections)
            ip address: 0.0.0.0
                  port: 1444
        client timeout: 0 (none)
          host timeout: 1 minute
           window size: 4096 bytes
     fold program name: on
                 ccsid: 273
 number of connections: 178
number of transactions: 20
           client type: cics
```

If this example had been for a Microsoft COMTI client, the client type value would be **comti** rather than **cics**. Table 8 describes the significant information shown for each server, in the order it appears.

Table 8 show txconn server Field Descriptions

Field	Description
server	Name of the txconn server.
destination	Default destination for the server.
server state	Status of the server process. Possible values are: • **disabled (unable to accept connections)** indicates that CICS client connections will be rejected. • **enabled (accepting connections)** indicates that the server is ready to accept connections from CICS clients.
ip address	TCP/IP address for which the server accepts connections. A value of 0.0.0.0 indicates that the server accepts connections for any IP address that is configured on the router.
port	TCP/IP port number on which the server listens.
client timeout	Number of minutes a CICS client can remain idle before it is automatically disconnected. A value of zero (0) indicates that the server does not disconnect clients for inactivity.
host timeout	Number of minutes a CICS host may remain idle before it is automatically disconnected. A value of zero (0) indicates that the server does not disconnect hosts for inactivity.
window size	TCP/IP receive window size.
fold	CTRC folds the CICS program name to upper case. Options are off or on. Default is on.
ccsid	The Coded Character Set Identifier.
number of connections	Number of currently active CICS client connections to the server.
number of transactions	Number of currently active CICS transactions being handled by the server.
client type	Shows whether the server provides connectivity for Microsoft COMTI clients or for IBM CICS Universal Client or TXSeries clients.

Related Commands

Command	Description
show txconn destination	Displays the CICS destinations configured for the current CTRC router.
show txconn route	Displays the CTRC routes defined for specific CICS transaction IDs.
txconn server	Configures CTRC servers for CICS communications.

show txconn statistic

To display information about the current router's CTRC communications with CICS, use the **show txconn statistic** EXEC command.

show txconn statistic [**kind** {**histogram** | **summary**}] **name** {**activeconnections** | **activetransactions** | **allocatetime** | **clientreceived** | **clientsent** | **clientturnaround** | **dump** | **hostreceived** | **hostresponse** | **hostsent** | **latency** | **maxconnections** | **maxtransactions** | **totalconnections** | **totaltransactions**}

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 other words, 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 {**activeconnections** | **activetransactions** | **allocatetime** | **clientreceived** | **clientsent** | **clientturnaround** | **dump** | **hostreceived** | **hostresponse** | **hostsent** | **latency** | **maxconnections** | **maxtransactions** | **totalconnections** | **totaltransactions**}	Specific statistic to display. Valid values are: • **activeconnections** displays the number of connections to CICS clients currently active. • **activetransactions** displays the number of CICS transactions currently being processed. • **allocatetime** displays the average time in seconds spent waiting for APPC allocate operation to complete. • **clientreceived** displays the total number of bytes received from CICS clients during the indicated time period. • **clientsent** displays the total number of bytes sent to CICS clients during the indicated time period. • **clientturnaround** displays the average time in seconds from receiving a request from a CICS client to sending that client a response during the indicated time period. • **dump** displays a compact statistics summary, in tabular format, for the last 24 hours. The statistics include all the individual statistics you can specify with the **name** parameter except the activeconnections and activetransactions data. • **hostreceived** displays the total number of bytes received from hosts for CICS connections during the indicated time period. • **hostresponse** displays the average host response time in seconds for CICS connections during the indicated time period. • **hostsent** displays the total number of bytes sent to hosts for CICS connections during the indicated time period.

- **latency** displays the average amount of time in seconds used by the txconn server per CICS client request (**clientturnaround** minus **hostresponse**).
- **maxconnections** displays the maximum number of concurrent connections to CICS clients 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

If the kind of statistics display is not specified, **summary** is used.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Usage Guidelines

Summary statistics are displayed by time period, where:

- [24] indicates statistics for the hour currently 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 am    1-2 a.m.    2-3 a.m.    3-4 a.m.    4-5 a.m.    . . .
02-24-2001  02-24-2001  02-24-2001  02-23-2001  02-23-2001  . . .
```

At 3 a.m.:

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

Examples

The following examples show histogram and summary displays of the **clientreceived** statistic.

```
Router> show txconn statistic kind histogram name clientreceived
                    Number of Bytes Received from Clients
18.82MB                                         ^
          ^  ^  ^  ^  ^  ^  ^  ^  ^  ^  ^  |  ^  ^  ^  ^  ^  ^  ^  ^  ^  ^  ^  ^
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
9.41MB    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  ^
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
0         -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
      7  8  9 10 11 12  1  2  3  4  5  6  7  8  9 10 11 12  1  2  3  4  5  6  *
                                        PM                                AM

Router> show txconn statistic name clientreceived
Number of Bytes Received from Clients

               yesterday     yesterday       today
----hour---    ----AM----    ----PM----    ----AM----

12:00-12:59                   19728481      19727299
01:00-01:59                   19732711      19727299
02:00-02:59                   19722903      19727382
03:00-03:59                   19728398      19731695
04:00-04:59                   19729497      19726200
05:00-05:59                   19730596      19733893
06:00-06:59                   19722986      19708616
07:00-07:59             0     19734992       8736034 *
08:00-08:59      19726283     19725101
09:00-09:59      19725101     19728398
10:00-10:59      19726283     19727382
11:00-11:59      19729497     19730596

24-hour total: 453731589 (excludes hour in progress *)
```

Related Commands

Command	Description
show txconn connection	Displays a list of all of the CTRC connections of the router to CICS clients.
show txconn destination	Displays a list of all of the CICS destinations of the current router for CTRC, or displays detailed status information for a specified CTRC CICS destination.
show txconn license	Displays the status of licenses used for CTRC.
show txconn route	Displays a list of all CTRC routes defined for specified CICS transaction IDs, or displays the server routes of a particular CTRC server to CICS.
show txconn server	Displays information about CTRC servers that communicate with CICS.
show txconn transaction	Displays a list of all the CTRC transactions of the current router with CICS, transactions of a specified CTRC server, or transactions of a specified CICS client connection.

show txconn transaction

To display a list of all the current router's CTRC transactions with CICS, a specified CTRC server's transactions, or a specified CICS client connection's transactions, use the **show txconn transaction** EXEC command.

show txconn transaction [**server** *server-name* | **connection** *connection-id* | *transaction-id*]

Syntax Description

server *server-name*	(Optional) Specifies a CTRC server for which to display a list of transactions.
connection *connection-id*	(Optional) Specifies a CICS client connection to CTRC for which to display a list of transactions.
transaction-id	(Optional) Specifies an individual transaction for which to display detailed status information.

Defaults

If no arguments are specified, all the CICS transactions for the current router are listed.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example shows information about all the CICS transactions being handled by the current router:

```
Router> show txconn transaction

Transaction ID Server     Conn ID    State     TP Name  User ID
-------------- ---------- ---------- --------- -------- --------
6246ECD8       CICSB      62494598   receiving CPMI     QAUSER
62476188       CICSB      62494598   receiving CPMI     QAUSER
623130D4       CICSB      62494598   receiving CPMI     QAUSER
6229E88C       CICSB      62494598   receiving CPMI     QAUSER
```

You can specify a particular transaction ID to display details about it, as shown in the following example:

```
Router> show txconn transaction 6246ECD8
                    transaction: 6246ECD8
                         server: CICSB
                  connection id: 62494598
                          state: receiving
                        tp name: CPMI
                        user id:
  session RU address (OAF+DAF): 6
                      idle time: 1788
--- Transaction Totals ---
number of transactions executed: 1
number of bytes received from client: 1099
number of bytes received from host: 0
```

Table 9 describes the significant information shown for each transaction in the order it appears in the display.

Table 9 show txconn transaction Field Descriptions

Field	Description
transaction	Unique identifier for the transaction.
server	CTRC txconn server process that is handling the transaction.
connection id	Unique identifier for the CICS client connection associated with the transaction.
state	Status of the transaction. Possible values are: • **closing** indicates that the SNA session is in the process of closing. • **exception** indicates that an error has occurred. An error indication will be sent to the client and the host session will be terminated. • **exc. resp.** indicates that the router has sent an error indication to the client. • **opening** indicates that the SNA session is about to open. • **parsing FMH** indicates that the SNA session has received the first portion of an FM header. • **parsing FMH5** indicates that CTRC is about to establish a SNA session with the host. • **parsing FMH7** indicates that the router just received an error from the CICS client. • **parsing DFC** indicates that the SNA session is about to close. • **receiving** indicates that the SNA session is receiving data from the host. • **reset** indicates that the SNA session is idle, waiting for a new transaction request from the CICS client. • **sending** indicates that the SNA session is sending data to the host. • **waiting** indicates that the SNA session is waiting for data from the client.
tp name	CICS transaction program name.
user id	CICS user ID associated with the transaction.
session RU address	SNA architected address that allows multiple sessions to share one connection.

Table 9 show txconn transaction Field Descriptions (continued)

Field	Description
idle time	Time in milliseconds that the SNA session has been idle.
number of transactions executed	Number of CICS transactions executed by the current SNA session.
number of bytes received from client	Number of bytes received from the CICS client during the current SNA session.
number of bytes received from host	Number of bytes received from the CICS host during the current SNA session.

Related Commands

Command	Description
show txconn connection	Displays a list of all of the CTRC connections of the router to CICS clients.
show txconn destination	Displays a list of all of the CICS destinations of the current router for CTRC, or displays detailed status information for a specified CTRC CICS destination.
show txconn server	Displays information about CTRC servers that communicate with CICS.

txconn destination

To configure a CTRC destination, use the **txconn destination** global configuration command. To remove the configuration for a txconn destination, use the **no** form of this command.

txconn destination *destination-name* **rlu** *rlu-name* **mode** *mode-name*

no txconn destination *destination-name*

Syntax Description

destination-name	Name of the destination being defined or added to. This name is used in the route configuration command to identify the destination for the route. If the destination does not exist, it is created; if it exists, the **rlu** and **mode** parameters are added as an additional routing target for this destination. When a destination contains multiple routing targets, it is like configuring a cluster where the various targets are chosen on a round-robin basis for load balancing.
rlu *rlu-name*	Remote LU name on the host. This parameter defines to which remote LU the server will connect when using this destination. A remote LU corresponds directly to a CICS region. The value you enter here should match your VTAM APPLID.
mode *mode-name*	Name of the APPC mode. This parameter defines which mode the server will use for its APPC connections when using this destination. If the mode you specify does not already exist, CTRC will create it.

Defaults

No defaults exist for the **txconn destination** command. However, the remote LU name of the host and the APPC mode name are optional for the **no** form of the command. If you omit them, CTRC removes the configuration for all routing targets defined for the destination. If you use **rlu** *rlu-name* **mode** *mode-name* to specify a particular routing target within a destination that has multiple targets, the configuration is removed only for the specified target.

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example shows the CTRC destination newdest being defined on the current router:

```
txconn destination newdest rlu CICSB mode IBMRDB
```

A second pair of rlu and mode values could be assigned to this same logical destination, to allow load sharing between the two destination CICS systems:

```
txconn destination newdest rlu CICSC mode IBMRDB
```

Related Commands

Command	Description
show snasw mode	Displays the SNASw modes.
show txconn destination	Displays a list of all of the CICS destinations of the current router for CTRC, or displays detailed status information for a specified CTRC CICS destination.

txconn license

To license a Cisco router for CTRC communications with CICS or DB2, use the **txconn license** global configuration command. To remove the license, use the **no** form of this command.

txconn license *license-key* **connections** *licensed-connections* **expiration-date** *yyyymmdd*

no txconn license

Syntax Description

license-key	License key obtained from your Cisco representative. The license key is a 32-character hexadecimal string that specifies the maximum number of CICS conversations or DB2 connections allowed for the CTRC router. The license key is generated for a specific router, and is based on the SNA Switching Services cpname for the router. Use the **show config | include cpname** command to view the cpname so you can provide it when you request the license key.
connections *licensed-connections*	Number of licensed connections. If the license is for an unlimited number of connections, omit the **connections** parameter.
expiration-date *yyyymmdd*	Date when a temporary license key expires, where *yyyy* is the year expressed in four digits, *mm* is the month expressed in two digits, and *dd* is the date expressed in two digits. If the license is for an unlimited time period (permanent license), omit the **expiration-date** parameter.

Defaults

If the number of licensed connections is not specified, the license key must allow an unlimited number of licensed connections. If the expiration date is not specified, the license key must be for a permanent license.

Command Modes

Global configuration

Command History

Release	Modification
11.3(2)T	This command was introduced.
12.0(5)XN	Command moved from CDBC feature to CTRC feature.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Usage Guidelines

Licenses are required for all CTRC installations. For testing and evaluation purposes, unlicensed CTRC installations allow you to establish two connections to DB2, or two conversations to CICS, or one to each. One license key is used for both CICS and DB2 communications, so you can use either the **dbconn license** command or the **txconn license** command to configure the CTRC router.

Examples

The following example shows the configuration of a CTRC router with a license that allows up to 4000 connections until January 1, 2005:

```
txconn license 3C09A051320BAF020BFF45B3A2FF21D2 connections 4000 expiration-date 20050101
```

Related Commands

Command	Description
show dbconn license	Displays the status of CTRC licenses for DB2 communications.
show snasw node	Displays details and statistics of the SNASw operation.
show txconn license	Displays the status of licenses used for CTRC.

txconn ping

To test communications between the CTRC router and a CTRC destination (a host defined by a pair of RLU and mode values), use the **txconn ping** EXEC command.

txconn ping *destination-name*

Syntax Description

destination-name	Specifies the CICS system for which to test communications.

Defaults

No default behavior or values.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Usage Guidelines

There is not a **no** form for this command.

Examples

The following example shows communications being tested between the current router and the CTRC destination GEN. Note that GEN is a destination that has two RLU-Mode pairs defined, and that the **txconn ping** command automatically tests connections to both:

```
txconn ping GEN
Trying GEN CICSC:IBMRDB
Destination GEN successfully contacted!
Elapsed time was 00:00:01.001
Trying GEN CICSB:IBMRDB
Destination GEN successfully contacted!
Elapsed time was 00:00:01.001

Elapsed time is noted in hours, minutes, seconds, and milliseconds.
```

Related Commands

Command	Description
ping sna	Initiates an APPC session with a named destination LU to run the APING transaction program to check network integrity and timing characteristics.

txconn route

To configure a CTRC route that will transmit specified transactions to a particular CICS destination, use the **txconn route** global configuration command. To remove the configuration of a CTRC route, use the **no** form of this command.

txconn route [**server** *server-name*] **tranid** *transaction-id* **destination** *destination-name*

no txconn route [**server** *server-name*] **tranid** *transaction-id*

Syntax Description

server *server-name*	(Optional) Name of the CTRC server to which this route applies. If omitted, this route is applied to all CTRC servers on the current router that are configured for communication with CICS.
tranid *transaction-id*	CICS transaction ID (a TP name). When the server processes a transaction that uses this transaction ID, the server routes the transaction using this route entry.
destination *destination-name*	Name of the destination to which the transaction is routed.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.

Examples

The following example shows a CTRC route to destination GEN being defined on the current router for transaction ID PNG1:

```
txconn route server newsvr tranid PNG1 destination GEN
```

Related Commands

Command	Description
show txconn route	Displays a list of all CTRC routes defined for specified CICS transaction IDs, or displays the server routes of a particular CTRC server to CICS.

txconn server

To configure a CTRC server for communications with CICS, use the **txconn server** global configuration command. To disable a CTRC server, use the **no** form of this command.

txconn server *server-name* **destination** *destination-name* [**access** {**cics** | **comti**}] [**ccsid** *number*] [**client-timeout** *minutes*] [**fold** {**on** | **off**}] [**host-timeout** *minutes*] [**ipaddress** *ip-address*] [**keepalive attempts** *number*] [**keepalive interval** *seconds*] [**port** *port-number*] [**target** {**cics** | **ims-tm**}] [**window-size** *bytes*]

no txconn server *server-name*

Syntax Description

server-name	Name of the server being defined. This name is used in other commands to identify the server being administered.
destination *destination-name*	Name of the server's default destination. Any transactions whose *tranid* is not associated with a particular route will be routed to this destination. The destination must already be defined when configuring the server.
access {**cics** | **comti**}	(Optional) Indicates whether *server-name* supports IBM CICS (Universal Client or TXSeries) or Microsoft COMTI clients. If this value is not specified, a default of CICS is used.
ccsid *number*	(Optional) The Coded Character Set Identifier. This is used for TXSeries clients.
client-timeout *minutes*	(Optional) Number of minutes of client connection inactivity after which the server decides the client has gone away. When this happens the server closes the client connection. If no client timeout is specified, the default is 0 (zero) for no timeout.
fold {**on** | **off**}	(Optional) Enables/disables the fold program. Default is on. CTRC folds the CICS program name to uppercase.
host-timeout *minutes*	(Optional) Number of minutes of host connection inactivity after which the server decides the host has gone away. When this happens the server closes the host connection. If no host timeout is specified, the default is 0 (zero) for no timeout.
ipaddress *ip-address*	(Optional) TCP/IP network address for which the server accepts connections. If this parameter is omitted, the server accepts connections for any IP address, like a wildcard address. If multiple servers are configured to listen on the same port, they must each specify a different IP address. If a server is configured with the IP address omitted, no other servers may listen on the same port. So, on a given port, you may configure either 1 wildcard IP address server, or *n* address-specific servers, where *n* is 1 or more.
keepalive attempts *number*	(Optional) The number of times for the CTRC server to attempt sending an acknowledgment message to the client to keep the connection alive. You can specify 1 to 100 attempts, or 0 (zero) to disable the keepalive messages. The default is 3 attempts.
keepalive interval *seconds*	(Optional) The frequency for the CTRC server to send an acknowledgment message to the client to keep the connection alive. The interval can be from 1 to 3600 seconds, or 0 (zero) to disable the keepalive messages. The default is 120 seconds.

port *port-number*	(Optional) TCP/IP port number on which the server listens. If no IP address is specified, only one server can listen on a port. Multiple servers can use the same port number if the combination of IP address and port number is unique to each server. If the port number is omitted, the server listens on port 1435.
target {**cics** | **ims-tm**}	(Optional) Indicates whether the host connection is to a CICS or IMS transaction server. The default is cics.
window-size *bytes*	(Optional) Size, in bytes, of the TCP/IP window for incoming CICS client connections. If no window size is specified, the default is 4096 bytes.

Defaults

If the CTRC server's IP address is not configured, the server accepts connections for any IP address that is configured for the router.

If you do not specify a client timeout, CICS client connections can continue regardless of how long they have been idle.

If you do not specify a host timeout, host connections can continue regardless of how long they have been idle.

If you do not specify a keepalive attempt or a keepalive interval, the server makes up to three attempts to send an acknowledgment message every 120 seconds.

If the port number is not configured, the server listens on port 1435.

If you do not specify a target, the server uses a default of cics.

If you do not specify a TCP/IP window size, the default value is 4096 bytes.

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)XN	This command was introduced.
12.0(7)T	This command was integrated into Cisco IOS Release 12.0 T.
12.1(5)T	This command was enhanced to allow configuration of the keepalive feature.

Usage Guidelines

You can configure more than one CTRC server per router for communications with DB2 or CICS. There is no limit on the number of CTRC servers. However, be sure that CTRC txconn servers and CTRC dbconn servers are configured to use different ports, and that each txconn server is configured to use a unique combination of port number and IP address, or a unique port number with no IP address. Set **keepalive attempts** or **keepalive interval** to zero (0) to disable the keepalive messages.

Examples

The following example shows the CTRC server newsvr being defined on the current router with the keepalive feature enabled to attempt five acknowledgment messages every 300 seconds:

```
txconn server newsvr destination GEN keepalive attempts 5 keepalive interval 300 port
1438
```

Related Commands

Command	Description
show txconn destination	Displays a list of all of the CICS destinations of the current router for CTRC, or displays detailed status information for a specified CTRC CICS destination.
show txconn server	Displays information about CTRC servers that communicate with CICS.