

Optimizing Traffic Routing and Bandwidth

To achieve peak network performance, the routing of traffic and use of available bandwidth is configurable. The information used in configuring traffic routing and bandwidth is gathered from historical network trends. The tasks required to optimize the network are: specifying channel utilization, specifying the class of service, and managing bandwidth. These tasks are discussed in the paragraphs that follow.

Specifying Channel Utilization

Use the **cnfchutil** command to specify the expected utilization of frame relay, data, or voice channel as a percentage of the channel's total capacity. The specified value can be in the range of 0% to 100%. 100% is the default for data and frame relay channels. The default for voice channels is 40%. To display the utilization of a particular trunk, use the **dsprkutil** command. This command displays a details on the packets transmitted over the trunk. The user can specify the rate in seconds at which the screen is updated. Use the **dspload** command to display the load for a specified trunk at a node.

Specifying Class of Service

Use the **cnfcos** command to specify a class of service (COS) for a frame relay, data, or voice channel. The class of service is a number from 0 to 15 that determines the channel's priority for rerouting in the event of trunk failure. The lower the number, the higher the priority. For each COS number, there is delay of 1 second in rerouting the next COS number. Thus COS 2 channels are rerouted 2 seconds after COS 0 channels. By spreading out the COS numbers to increase the delay interval, one class of channels have a chance to reroute before the next class starts to reroute.

Managing Bandwidth

There are a number of commands that assist in managing bandwidth to achieve satisfactory traffic patterns.

- upcon, dncon The up and down connection commands can be used to temporarily down connections of a specified COS, thus releasing bandwidth for other services. Often it is possible to down some voice connections to provide more bandwidth for data and frame relay connections.
- cnfpref The configure preference command can be used to specify preferred routing for intra-domain connections. This command can be used to assist in balancing the load on the network's trunks.
- dsprts, prtrts The display and print routes commands can be used in conjunction with the **cnfpref** command to display the current connection routing information.

Summary of Commands

The following list shows the full command name and starting page for each description.

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cnfchutl

Informs the system software of the expected utilization rate of connections with traffic-dependent compression algorithms (voice connections with VAD, data connections with DFM, frame relay connections, FastPAD voice connections with ATC-8K, ATC-12K, ATC-16K, or CELP-8K compression). The software load model then takes the full rate for the connection (e.g. 381 packets/second for a voice connection) and modifies it using the specified percentage. The resulting rate is used in calculations for loading trunks. The load model uses these figures instead of estimates calculated from real traffic patterns.

On a FastPAD channel, the compression rate adapts to the congestion level within the network. The configured compression rate indicates the maximum rate for the channel. FastPAD channels detect FAX signals and adapt their rates for FAX transmittal. For the full benefits of the compression algorithms to be used, the default utilizations should be modified after traffic studies have been performed. Also, traffic studies of frame relay connections should be used to determine optimum utilization settings. When calculating loads in a network, the load allocated to a connection is:

channel utilization x full load for the connection type

For example, with a channel utilization of 50% and a full load of 480 packets per second, the load allocated to a connection is:

$0.50 \times 480 \text{ pps} = 240 \text{ pps}$

For data connections with DFM turned off, for voice connections with VAD turned off, and for all FastPAD data connections, the bandwidth allocated is always the maximum bandwidth for the connection type. In other words, the utilization, although configurable, is ignored for a voice channel without VAD, a data channel without DFM and all FastPAD data channels.

If the **cnfchutl** command is used to increase the utilization of a connection, the system verifies that the additional bandwidth is available on the connection's current route. If the bandwidth is not available, the system attempts to reroute the connection. If no other route is found, the connection is failed. If the **cnfchutl** command is used to decrease the utilization of a connection, the system makes the bandwidth available to other connections that require a route. The screen displayed by the **cnfchutl** command depends upon whether a data channel, voice channel, or frame relay channel is specified. The screen displayed is the same as that for the **dspchcnf** command.

Full Name

Configure channel utilization

Syntax

cnfchutl <channel(s)> <%_util>

Related Commands

dspchcnf

Attributes

Privilege 1-2
Jobs Yes
Log Yes
Node IPX, IGX
Lock Yes

Example 1 Description

cnfchutl 5.1 40

Set utilization on data channel 5.1 at 40%

System Response

```
alpha          TRM   YourID:1          IPX 16    8.2    Mar. 23 1996 10:45 PST

Channels      Maximum EIA    %    DFM Pattern    DFM
              Update Rate   Util  Length         Status
5.1           15            40   8              Enabled
5.2-4         2             100  8              Enabled
```

Last Command: cnfchutl 5.1 40

Next Command:

Example 2 Description

cnfchutl 14.1 55

Set utilization on voice channel 14.1 at 55%

System Response

```
alpha          TRM   YourID:1          IPX 16    8.2    Mar. 16 1996 10:10 PST

                %   Adaptive Gain (dB)   Dial
Channels Util Voice   In Out   Type   Interface Type   OnHk   Cond
14.1         55   Enabled -4   -   User   Unconfig         ? ? - -   a
14.2-24     40   Enabled  0   -   Inband Unconfig         ? ? - -   a
```

Last Command: cnfchutl 14.1 55

Next Command:

Example 3 Description

cnfchutl 8.1.100 60

Set utilization on frame relay channel 8.1.100 at 60%

System Response

```
alpha          TRM   YourID:1          IPX 16    8.2    Mar. 23 1996 10:45 PST

                Frame Relay Channel Configuration Port: 8.1

From          Minimum Peak   AvgFrame Cmax VC Q   ECN Q   % Util
8.1.100       9.6   *     70      10  65535  65535  60
8.1.301       9.6   *     70      10  65535  65535  100
```

Last Command: cnfchutl 8.1.100 60

Next Command:

Table 11-2 cnfchutl – Parameters

Parameter	Description
channels	Specifies the channel for configuring utilization. The channel can be for voice, data, frame relay, or Fast PAD voice or data. <i>Channel</i> has one of the following formats: slot.channel For voice connections slot.port For data connections slot.port.DLCI For frame relay connections slot.port For FastPAD switched voice connections slot.port.subslot For FastPAD voice connections slot.port.subslot.subport For FastPAD data connections
percent utilization	Specifies the percentage of utilization of the channel. The is range 0 - 100. The default value for data or frame relay is 100%. The default value for voice is 40%.

cnfcos

Sets the priority for rerouting a connection. When connections have failed (normally due to trunk failures), they are rerouted according to priorities that are set primarily by the COS. The assigned class of service determines the order of rerouting for connections owned by a node. The routing algorithm waits 1 second between each COS increment. Thus, a connection with a COS of 0 is rerouted 2 seconds before a connection with a COS of 2.

If a network carries large volumes of traffic, use fewer COS increments. A larger increment means fewer increments. For example, an increment of 3 would mean COSs of 0, 3, 6, 9, 12, and so on. For a network with little traffic, assign COS values in increments of 2 (COSs of 0, 2, 4, and so on). This ensures that all connections of a given COS reroute before the connections with the next COS start to reroute.

Full Name

Configure class of service for connections

Syntax

```
cnfcos <group | channel(s)> <cos>
```

Related Commands

dspcons

Attributes

Privilege	1-2
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1 Description

```
cnfcos 5.1 0
```

Set the COS for channel 5.1 to 0

System Response

```

alpha          TRM   YourID:1          IPX 16    8.2    Mar. 16 1996 10:12 PST

Local          Remote      Remote
Channel        NodeName    Channel    State   Type    Compression  Code Avoid COS O
5.1            beta        25.1       Ok      256
9.1.100        gamma      8.1.200    Ok      fr
9.2.400        beta       19.2.302   Ok      fr
14.1           gamma      15.1       Ok      v
    
```

Last Command: cnfcos 5.1 0

Next Command:

Table 11-3 cnfcos – Parameters

Parameter	Description
channels	<p>Specifies the the voice, data, frame relay or Fast PAD voice/data channel(s) for which to configure channel utilization, where channel is one of the following:</p> <ul style="list-style-type: none"> • slot.channel For voice connections • slot.port For data connections • slot.port.DLCI For frame relay connections • slot.port For FastPAD switched voice connections • slot.port.subslot For FastPAD voice connections • slot.port.subslot.subport For FastPAD data connections
cos	<p>Specifies the class of service number to assign to the channel, range of channels or connection group. The range is from 0 to 15. The lower the class of service number, the higher the priority for rerouting.</p>

cnfpref

Specifies the preferred route for a connection, connection group, or range of connections. Enter **cnfpref** only at a node that is an end point of the connection. This command applies only to connections that exist *within* a domain. Do not attempt to execute **cnfpref** on connections that exit between domains.

The specified preferred route for a connection is used when possible. If the preferred route is different from the existing route, the connection automatically moves to the preferred route whenever network conditions allow (for example, when trunks are out of alarm and sufficient bandwidth exists).

Full Name

Configure preferred route for connections

Syntax

```
cnfpref <channels> <route> [d]
```

Related Commands

dsprts

Attributes

Privilege	1–2
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1 Description

```
cnfpref 14.1 13/beta 15/gamma d
```

Select the preferred route for channel 14.1 to be through beta trunk 13 to beta then to gamma trunk 15. For gamma, the “d” in the command specifies that the route is *directed*.

System Response

```
alpha          TRM   YourID:1          IPX 16      8.2      Mar. 16 1996 10:22 PST

From 14.1          Route
14.1
Pref:(D)  alpha  14--13beta  15--15gamma
          alpha  14--13beta  15--15gamma
```

Last Command: cnfpref 14.1 13/beta 15/gamma d

Next Command:

Example 2 Description

cnfpref 6.4

Remove the preferred route for channel 6.4

Example 3 Description

cnfpref * +

Designate the current routing of all locally owned connections to be the preferred routing. Using a “-” instead of a “+” in the command would remove the preferred routing designation of all locally owned connections.

System Response

```

alpha          TRM   YourID:1          IPX 16      8.2      Mar. 23 1996 10:48 PST

Chan/Grp  Route
5.1
  alpha   10-- 7beta
Pref:    alpha   10-- 7beta
9.1.100
  alpha   14--13beta   15--15gamma
Pref:    alpha   14--13beta   15--15gamma
9.1.200
  alpha   10-- 7beta   15--15gamma
Pref:    alpha   10-- 7beta   15--15gamma
9.2.400
  alpha   10-- 7beta
Pref:    alpha   10-- 7beta

Last Command: cnfpref * +

Next Command:

```

Table 11-4

Parameter	Description
channels	<p>Specifies the channel, group, or range of channels for preferred route configuration. The channel specifier has one of the following formats:</p> <ul style="list-style-type: none"> • slot.channel voice connection. • slot.port data connection. • slot.port.DLCI frame relay connection. • remote node.groupname frame relay connection group connection. • slot.port.subport FastPAD voice connection. • slot.port.subslot.subport FastPAD data connection <p>A n"*" specifies all locally owned connections and applies only to the "+" and "-".</p>
route	<p>Designates the preferred route for the connection(s) to take through the network. The route is designated by one or more "trunk/node name" pairs. At a given node <i>alpha</i>, for example, entering a route of "12/delta 6/epsilon", would route the connection from alpha to delta via delta's trunk 12. The connection would then go from delta to epsilon via epsilon's trunk 6. A "+" causes the connection's current route to become the preferred route. A "-" removes the connection's preferred route designation.</p>

Table 11-5 cnfpref – Optional Parameters

Parameter	Description
d	Specifies directed routing. If the preferred route is not available, the connection is failed.

dncon

Deactivates (downs) a connection, bundle of connections, a connection group or all connection in a COS or COS range. The **dncon** command temporarily removes a connection or connections from the network. This command is useful for temporarily removing voice connections when additional bandwidth is necessary for other types of connections.

Connections can be downed immediately or with courtesy. Even with immediate downing, a prompt appears that requests confirmation. With courtesy downing, the system waits until the connection is onhook before downing the connection. Courtesy downing is possible only if the onhook status has been configured with the **cnfvchtp** command. Courtesy downing is not available for FastPAD connections because the signalling information between the end points is not visible to the IPX or IGX. The **upcon** command reactivates the voice connections. The up/down status of the voice connections appears in the "State" column of the **dspscons** screen. The following describes each status.

Table 11-6

State	Description
"OK" (routed)	Connection is activated and able to carry traffic.
"Down"	Connection has been added to the network database but is not activated and is not able to carry traffic.
"OK(Dn)"	Waiting for onhook to occur to allow courtesy down to take place for connection(s) that have been courtesy downed using the dncon command.
"Failed"	Unrouted, but trying to reroute.

Full Name

Down connections

Syntax

```
dncon {<group | local_chan(s)> | COS <cos_range>} {i | c}
```

Related Commands

upcon

Attributes

Privilege	1–2
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1 Description

```
dncon 14.1 c
```

Down connection 14.1 with courtesy

Example 2 Description

```
dncon 14.1 i
```

Down connection 14.1 immediately

Example 3 Description

```
dncon cos 4-8 c
```

Courtesy down on-hook connections network-wide with COS 4 through 8. This command marks all connections that may be courtesy downed at one time and does not monitor new connections or those that later fit the COS.

Example 4 Description

```
dncon 3.1.100 i
```

Immediately down connection 3.1.100.

System Response

```
pubsigx1      TN      SuperUser      IGX 32      8.2      Aug. 26 1996 16:51 GMT

Local         Remote      Remote
Channel       NodeName    Channel       State  Type       Compress  Code COS
3.1.100      pubsigx1    3.2.200      Ok     fr
3.2.200      pubsigx1    3.1.100      Ok     fr
```

```
This Command: dncon 3.1.100 i
```

```
Down these connections (y/n)?
```

Example 5 Description

```
dncon cos 4-8 i
```

Immediately down all connections network-wide with COS 4 through 8. This command executes once, so if individual connections are subsequently upped or new connections added in this COS range, they remain up.

Example 6 Description

```
dncon cos 14.1.3
```

Down FastPAD voice connection 14.1.3

Example 7 Description

```
dncon cos 14.1.1.5
```

Down FastPAD data connection 14.1.1.5

Table 11-7 dncon – Parameters

Parameter	Description
channels or group	Specifies a group, a channel, or a range of channels to down.
cos range	Specifies the COS or COS range. The range is 0–15.

Table 11-8 dncon – Optional Parameters

Parameter	Description
i/c	Specifies immediate downing (i) of the specified connections or courtesy downing (c) of the specified connections.

dspload

Displays both the used and available bandwidth (both in the transmit and receive directions) for each trunk at the specified node. The “transmit” direction is FROM the node specified TO the node at the other end of the trunk. Disabled trunks have their trunk number displayed in dim, reverse video on the screen.

The **dspload** display reflects the static load model stored by the node and used to determine the bandwidth available for new connections and reroutes. The display does not represent the dynamic utilization of the trunks, which will vary. Some types of connections, such as voice connections using adaptive voice and data connections using DFM suppress packets. While frame relay connections may generate additional packets when bandwidth permits.

When this command is executed at a local node in structured networks, the information displayed is for any node on the intra-domain lines belonging to the same domain. When this command is executed at a junction node, the information displayed is for all inter-domain lines between all junction nodes. The node uses the terminating and through routed connections' calculated load to calculate the trunk load. The connection type (v, c, a, or d) or baud rate (9.6 Kbps, 56 56 Kbps, and so on) and other factors determine its basic load. The calculated trunk load is also modified by the **cnfchutl** command for connections that use VAD, DFM, or frame relay.

A certain amount of bandwidth is reserved for each trunk (using **cnftrk**). The reserved bandwidth is available only for high priority packets (e.g. PCC traffic). The node cannot route connections using this reserved bandwidth. The following loading, in packets per second, is calculated for each trunk in each direction:

$$\text{total trunk capacity} = \text{current load} + \text{open space} + \text{statistical reserve}$$

If the **dspload** command includes a trunk number, detailed information for each of the packet types on that line appears. See Example 2. Additional categories of information for frame relay loads on the trunk include Cmax In Use, Cmax Available, and Cmax Capacity.

Full Name

Display connection loading

Syntax

dspload [nodename] [line number] [-j | -l]

Related Commands

dspplnutl

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1 Description

dspload

Display the load for all trunks that terminate on the current node.

System Response

alpha TRM YourID:1 IPX 16 8.2 Mar. 16 1996 11:54 PST

Packet Line loads for node 'alpha'

PLN	Units		Used		Available		Reserved		Cmax In Use		Cmax In Use	
	Xmt	Rcv	Xmt	Rcv	Xmt	Rcv	Xmt	Rcv	XmtA	RcvA	XmtB	RcvB
10	Pkts	Pkts	1760	1744	8304	8320	600	600	0	0	0	0
14	Pkts	Pkts	504	504	6896	6896	600	600	20	20	0	0

Last Command: dspload

Next Command:

Example 2Description

dspload 10

Display the load for the trunk in slot 10 of the current node.

System Response

sw151 TN SuperUser IGX 16 8.2 Aug. 26 1996 17:05 GMT

Configured Packet Line Loading: PLN sw151 10--10 sw150

Load Type	Xmt-p	Rcv-p	lcl
NTS	2016	2016	Conid In Use 11
TS	432	432	Conid Available 1760
Voice	208	208	Total Capacity 1771
BData A	0	0	
BData B	0	0	Line type is Terrestrial
CBR	0	0	Line supports BData Load
VBR	0	0	Line does not use ZCS
ABR	0	0	Traffic class:
Total In Use	2656	2656	V TS NTS FR FST CBR VBR ABR
Reserved	992	992	
Available	76352	76352	
Total Capacity	80000	80000	

Last Command: dspload 10

Next Command:

Table 11-9 dspload – Optional Parameters

Parameter	Description
nodename	Specifies the node. If a node is not specified, the display shows loading on the local node. The node must be in the domain where the command is entered unless the node is a junction nodes. If the specified node is a junction node, the display shows loading for junction domain lines.
line number	Specifies the physical line whose loading information is displayed.
l j	Specifies either a local or a junction node.

dspospace

Displays the open space for a connection route.

Full Name

Display open space for a route

Syntax

dspospace <connection | group>

Related Commands

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1 Description

dspospace 4.1.1

Display the open space for the ATM-frame relay connection 4.1.1. The line interface card is a UFM-8C.

System Response

```

swl10          TN      SuperUser      IGX 16      8.2 Jan. 22 1997 19:11 GMT

Open Space for 4.1.1                                     Snapshot

Domain
Local:  swl10      8--10.3sw86      6.2-- 6.1sw81
        ms_cur_pkts: 524272      ms_cur_cells: 12576
        sm_cur_pkts: 4368       sm_cur_cells: 11296

```

Last Command: dsospace 4.1.

Next Command:

Table 11-10 dsospace – Parameters

Parameter	Description
connection or group	Specifies the connection or connection group.

dsprts

Displays the routes used by all connections at a node. The display shows the trunk numbers and names of all nodes in the path. For FastPAD connections, the displayed connection routes terminate at the IPX or IGX nodes. A blinking trunk indicates a failed line. A tilde trunk (~) indicates a satellite line.

Full Name

Display connection routing

Syntax

dsprts [start group | chan] [nodename]

Related Commands

cnfpref

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	No

Example 1 Description

dsprts

Display the connection routes.

System Response

```
alpha          TRM   YourID:1          IPX 16      8.2      Mar. 16 1996 12:50 PST
```

```
Chan/Grp  Route
5.1
   alpha  10-- 7beta
Pref:      Not Configured
9.1.100
   alpha  14--13beta    15--15gamma
Pref:      Not Configured
9.2.400
   alpha  14--13beta
Pref:      Not Configured
14.1
   alpha  14--13beta    15--15gamma
Pref:(D)  alpha  14--13beta    15--15gamma
```

```
Last Command: dsprts
```

```
Next Command:
```

Table 11-11 dsprts – Optional Parameters

Parameter	Description												
start group or channel	Specifies the starting group or channel with which to begin the display. Channel displays are in numeric order. If no starting channel is specified, the display begins with the first connected channel. Start channel is specified in one of the following formats: <table border="0" style="margin-left: 40px;"> <tr> <td>slot.channel</td> <td>voice connection.</td> </tr> <tr> <td>slot.port</td> <td>data connection.</td> </tr> <tr> <td>slot.port.DLCI</td> <td>frame relay connection.</td> </tr> <tr> <td>remote node.groupname</td> <td>frame relay connection group.</td> </tr> <tr> <td>slot.port.subport</td> <td>FastPad voice connection.</td> </tr> <tr> <td>slot.port.subslot.subport</td> <td>FastPAD data connection.</td> </tr> </table>	slot.channel	voice connection.	slot.port	data connection.	slot.port.DLCI	frame relay connection.	remote node.groupname	frame relay connection group.	slot.port.subport	FastPad voice connection.	slot.port.subslot.subport	FastPAD data connection.
slot.channel	voice connection.												
slot.port	data connection.												
slot.port.DLCI	frame relay connection.												
remote node.groupname	frame relay connection group.												
slot.port.subport	FastPad voice connection.												
slot.port.subslot.subport	FastPAD data connection.												
node name	Specifies that connections from only the local node to the current node are displayed. If no <i>nodename</i> is entered, connections from the local node to all other nodes are displayed.												

dsptrkutl

Displays dynamic utilization information for a specified trunk. The trunk must be upped and added to use this command. The following lists the trunk utilization and terminated connection parameters included in the display. The parameter values are updated according to the specified or default interval and the screen remains displayed until the DEL key is depressed. Disabled trunks have their trunk number displayed in dim, reverse video on the screen.

Table 11-12

Trunk Utilization Parameters Statistics	Description
Elapsed Time (seconds)	Elapsed time in seconds since the command was started
Total Packets Transmitted	Number of packets transmitted during the elapsed time.
Overall Packet Rate	Number of packets transmitted per second during the (pkts/sec) elapsed time.
Overall utilization	Bandwidth used, expressed as a percentage of the available bandwidth during the elapsed time. This is: $100 \times (\text{"Total packets transmitted"} / (\text{"Elapsed Time"} \times \text{bandwidth (in packets per second)}))$.
Peak Interval Utilization	Bandwidth used, expressed as a percentage of the available bandwidth during the peak interval. This is: $100 \times (\text{"Total packets transmitted"} / (\text{"Peak Interval"} \times \text{bandwidth (in packets per second)}))$.
Last Interval (seconds)	Elapsed time, in seconds, for the last screen update interval.
Interval packets generated	Number of packets transmitted during the last interval.
Interval packet rate (pkts/sec)	Number of packets transmitted per second during the last interval.
Interval utilization	Bandwidth used expressed as a percentage of the available bandwidth during the last interval. This is: $100 \times (\text{"Interval packets transmitted"} / (\text{"Last Interval"} \times \text{bandwidth (in packets per second)}))$.
Total Connections	Total number of connections routed over the trunk.
Terminated/Via	Terminated: Number of connections routed over the trunk that terminate at this node. Via: Number of connections routed over the trunk that do not terminate at this node.

Table 11-13

Terminated Connection Statistics	Description
Voice terminated	Number of voice connections terminated at this node that are routed over his trunk.
Data terminated	Number of data connections terminated at this node that are routed over this trunk.
Frame relay terminated	Number of frame relay connections terminated at this node that are routed over this trunk.
Num voice offhook	Number of voice connections off-hook that are terminated at this node and routed over this trunk.
Connection Type	Voice connection types: c, a, v, p or t.
Connection Num	Number of terminated voice connections of each type: c, a, v, p and t.
Modem On	Number of terminated connections with modem detected.
Modem V.25	Number of terminated connections with V.25 modem detected.
VAD Enabled	Number of terminated connections with VAD enabled.

Full Name

Display trunk utilization

Syntax

dsprkutl <trunk number> [interval]

Related Commands

dspload, dspchhist, dsprkhist

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	Yes

Example 1 Description

dsprkutl 5.3

Display trunk utilization for port 3 of the BNI in slot 5. The node is a BPX.

System Response

bootzilla TN SuperUser BPX 15 8.2 Aug. 27 1996 15:21 GMT

TRK 5.3 Utilization Display

Elapsed time (seconds)	160.1	Terminated Connection Statistics			
Total cells transmitted	30	Voice terminated	0		
Overall cell rate (cells/sec)	0	Data terminated	0		
Overall utilization	0%	ATM and FR terminated	1584		
Peak interval utilization	1%	Num voice OffHook	0		
Last interval (seconds)	5.1				
Interval cells generated	0	Connection	Modem	Modem	VAD
Interval cell rate (cells/sec)	0	Type	Num	On	V.25
Interval utilization	0%	c	0	0	0
		a	0	0	-
Terminated Connections	1584	v	0	0	0
Via Connections and Groups	0	p/t	0	0	-

This Command: dsptkctl 5.3

Hit DEL key to quit:

Table 11-14 dsptkctl – Parameters

Parameter	Description
trunk number	Specifies the number of the trunk in the format <i>slot.trunk</i> . If the card has only one trunk, you can enter just the slot.

Table 11-15 dsptkctl – Optional Parameters

Parameter	Description
interval	Specifies the number of seconds between screen updates. The range is 1–60. The default is 5.

prtrts

Prints the connection routes for channels on the IPX or IGX node. It uses the same syntax and prints the same information as the **dsprts** command. See the **dsprts** description for output information.

Full Name

Print connection routes

Syntax

```
prtrts [start_channel] [dest_nodename]
```

Related Commands

dsprts

Attributes

Privilege	1-6
Jobs	Yes
Log	No
Node	IPX, IGX
Lock	Yes

Example 1 Description

```
prtrts
```

Print connection routes.

System Response

None available as command produces hardcopy.

Table 11-16 prtrts – Optional Parameters

Parameter	Description												
start channel	<p>Specifies the channel with which to print. Channels are printed in numeric order. If no starting channel is specified, the display begins with the first connected channel. Start channel is specified in one of the following formats:</p> <table data-bbox="451 428 1146 653"> <tr> <td>slot.channel</td> <td>voice connection.</td> </tr> <tr> <td>slot.port</td> <td>data connection.</td> </tr> <tr> <td>slot.port.DLCI</td> <td>frame relay connection.</td> </tr> <tr> <td>remote node.groupname</td> <td>frame relay connection group.</td> </tr> <tr> <td>slot.port.subport</td> <td>FastPad voice connection.</td> </tr> <tr> <td>slot.port.subslot.subport</td> <td>FastPAD data connection.</td> </tr> </table>	slot.channel	voice connection.	slot.port	data connection.	slot.port.DLCI	frame relay connection.	remote node.groupname	frame relay connection group.	slot.port.subport	FastPad voice connection.	slot.port.subslot.subport	FastPAD data connection.
slot.channel	voice connection.												
slot.port	data connection.												
slot.port.DLCI	frame relay connection.												
remote node.groupname	frame relay connection group.												
slot.port.subport	FastPad voice connection.												
slot.port.subslot.subport	FastPAD data connection.												
destination node name	<p>Specifies the printing of connection routes from only the local node to the current node. Without a specified node name, the printout shows connections from the local node to all other nodes.</p>												

upcon

Ups (activates) a connection, bundle of connections, group of connections, or all connections with a COS or COS range. When a connection is upped, the system tries to route. If the connection cannot immediately be routed, the connection is failed and generates a major alarm. The State display column in an **upcon** or **dspcons** screen has the following meaning:

- “OK” (routed).
- “Down” (downed).
- “OK(Dn)” (waiting for onhook to occur to allow courtesy down to take place for connection(s) that have been courtesy downed using the **dncon** command).
- “Failed” (not routed, but trying).

Full Name

Up a connection

Syntax

```
upcon {<group | local_chan(s)> | COS <cos_range> }
```

Related Commands

dncon, dspcon, dspcons

Attributes

Privilege	1-2
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1 Description

upcon 5.1

Activate connections 5.1

System Response

```

alpha          TRM  YourID:1          IPX 16    8.1    Mar. 23 1996 11:33 PST

Local      Remote      Remote
Channel    NodeName    Channel    State   Type     Compression  Code Avoid COS O
5.1        beta        )25.1      Ok      256
9.1.100    gamma       8.1.200    Ok      fr
9.1.200    gamma       8.1.300    Ok      fr
9.2.400    beta        19.2.302   Ok      fr(Grp)
14.1       )gamma      15.1       Ok      v
    
```

Last Command: upcon 5.1

Next Command:

Example 2 Description

upcon 9.1-4

Activate a range of connections 9.1-4

Example 3 Description

upcon alpha

Activate a Frame Relay group connection

Example 4 Description

upcon 9

Activate all downed connections with a COS of 9

Example 5 Description

upcon cos 9-12

Activate all downed connections with a COS of 9-12

Table 11-17 upcon – Parameters

Parameter	Description
group or channel(s)	Specifies a group, a channel, or a range of channels to activate.
COS /cos range	Specifies the COS or COS range. The range is 0–15.