

Cisco WAN Switching Command Reference

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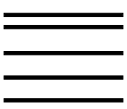
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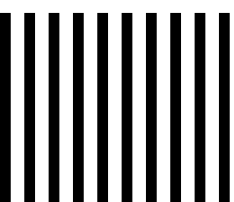
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About This Manual

This manual describes the Cisco WAN switch user commands for System Software Release 9.1. These commands configure, monitor, and manage a network consisting of Cisco WAN switches. (For descriptions of the super user commands, refer to the manual titled *Cisco WAN Switching SuperUser Command Reference*.) Each chapter pertains to a particular aspect of using a Cisco WAN switch network. For example, Chapter 4, “Setting Up Trunks” contains the commands that apply to setting up and configuring trunks in the network (except for trunks between an MGX 8220 shelf and a BPX node). Some commands apply to more than one technology. The **addcon** command, for example, appears in many chapters. The locations of each single and multi-application command appear in Appendix A, which contains an alphabetical listing of commands with chapter page numbers.

This section discusses the objectives, audience, organization, and conventions of the *Cisco WAN Switching Command Reference* publication.

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Objectives

This publication provides descriptions for using the Cisco WAN switch user commands in the command line interface.

Audience

The Cisco WAN switch command line interface lets you control the network at the device level. Therefore, this document helps network designers and operators to set up, manage, and troubleshoot networks.

Cisco WAN Switching Product Name Change

The Cisco WAN Switching products have new names. The AXIS shelf is now called the Cisco MGX™ 8220 edge concentrator. General references to switches within the IGX switch family (IGX 8, IGX 16 and IGX 32 wide-area switches) now refer to Cisco IGX™ 8400 series wide-area switches. The IGX 8 switch is now called the Cisco IGX™ 8410 wide-area switch. The IGX 16 switch is now called the Cisco IGX™ 8420 wide-area switch, and the IGX 32 switch is now called the Cisco IGX™ 8430 wide-area switch. General references to switches within the BPX switch family (BPX and BPX Tag Switch Controller wide-area switches) now refer to Cisco BPX® 8600 series wide-area switches. The BPX switch is now called the Cisco BPX® 8620 wide-area switch. The BPX Tag Switch Controller switch is now called the Cisco BPX® 8650 wide-area switch.

Organization

The chapters and appendix in this publication are as follows:

- Preface, “About This Manual,” describes this manual and the layout of the command definitions.
- Chapter 1, “IPX, IGX, and BPX Fundamentals,” provides fundamental information on how to communicate with a node.
- Chapter 2, “Basic Commands,” describes the commands that support your use of the command line interface (for example, how to clear the screen or add a user).
- Chapter 3, “Setting Up Nodes,” describes the commands that let you configure a node.
- Chapter 4, “Setting Up Trunks,” describes the commands that let you set up the network trunks, interface shelves, and topology.
- Chapter 5, “Setting Up Lines,” describes the commands that let you set up lines to the service ports on the node.
- Chapter 6, “Voice Connections,” describes the commands that relate to voice connections.
- Chapter 7, “Data Connections,” describes the commands that relate to serial data connections.
- Chapter 8, “Frame Relay Connections,” describes the commands for frame relay connections.
- Chapter 9, “ATM Connections,” describes the commands that relate to ATM connections.
- Chapter 10, “Optimizing Traffic Routing and Bandwidth,” describes the commands that help fine-tune the use of network resources.
- Chapter 11 “Synchronizing Network Clocks,” describes the commands that let you select and monitor clocks for the network.
- Chapter , “Managing Jobs,” describes the commands for specifying and triggering a job.
- Chapter 13, “Managing the Network,” describes the commands that relate to site administration of the Cisco WAN Switching network. Tasks include password and local time specification.
- Chapter 14, “Troubleshooting Commands,” describes the commands that let you check alarms or test various links in the network by using loopbacks.
- Chapter 15, “Access Device Commands on a Node,” describes the commands that make an access device recognized and configurable on a node. The chapter consists of command descriptions that are unique to access devices (such as the Cisco 3810) and descriptions of commands that are similar for other technologies.

- Chapter 16, “FastPAD Commands,” describes the commands used to make a FastPAD recognized and configurable on a node. Some of the command descriptions in this chapter are unique to the FastPAD, however, this chapter also includes descriptions of commands that are applicable to other access devices (such as the Cisco 3810).
- Chapter 17, “Tag Switching Commands,” describes the commands used to add a VSI based controller such as the TSC (Tag Switching Controller) to the BPX.
- Appendix A, “Command Listing,” contains an alphabetical list of the commands in this manual with the chapter and page number of each.

Each chapter includes an introduction to the function of the commands and a list of the commands in that chapter. Chapters consist primarily of command descriptions. Command descriptions appear in alphabetical order. Several chapters include flow charts to illustrate how commands contribute to a larger task, such as bringing up a circuit line.

Each command description begins with the command name and a functional description. Summaries for the command and its mandatory and optional parameters follow the functional description. The summaries are in table format. The following contains a description for each part of the command summary:

Tables

Normally, the tables contain detailed information on command parameters.

Command Summary

Contains general information about a command. Information includes:

- full name
- syntax (including required parameters and optional parameters, if any)
- related commands
- attributes, such as user privilege required and whether the command can be part of a job
- example usage with screens

The syntax field indicates whether the command requires parameters or optional parameters. If required, the Parameter and Optional Parameter summaries follow the Command summary. When you enter a command at the control terminal, the system usually prompts for individual parameters. Use the Parameter and Optional Parameter summaries to determine which values to enter.

Parameters

Provides all the parameters required to execute the command (included only if noted in the syntax field of the Command Summary table).

Optional Parameters

Provides all the optional parameters that can be used when executing the command (included only if noted in the syntax field of the Command Summary table).

Conventions

This publication uses the following conventions to convey instructions and information.

Command descriptions use these conventions:

- Commands and keywords are in **boldface**.
- Arguments for which you supply values are in *italics*.
- Required command arguments are inside angle brackets (< >).
- Optional command arguments are in square brackets ([]).
- Alternative keywords are separated by vertical bars (|).

Examples use these conventions:

- Terminal sessions and information the system displays are in `screen` font.
- Information you enter is in **boldface screen** font.
- Nonprinting characters, such as passwords, are in angle brackets (< >).
- Default responses to system prompts are in square brackets ([]).

Note Means you should *take note*. Notes contain important suggestions or references to materials not contained in the current body of text.



Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

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IPX, IGX, and BPX Fundamentals

A workstation, terminal, or a PC can function as a control terminal for an IPX, IGX, or BPX node through an EIA/TIA-232 link or over an Ethernet TCP/IP LAN. All command input takes place at the terminal, and all displays appear on the terminal screen. Through displays that show status, alarm, or statistics, the terminal constantly provides a view of an individual node, a trunk, a connection, or the whole network.

The control terminal provides control of the network from any routing node. A remote access command is available for controlling the network from a node other than the node physically connected to the terminal. This command is the Virtual Terminal (**vt**) command. The **vt** command creates a communication channel for the operator to a remote node. Once a node is accessed by **vt**, command execution can begin at the accessed node. Most commands and tasks that are executable at the local node are also executable at a remote node.

The StrataView Plus Network Management Station provides network management capabilities for multi-node networks. StrataView Plus also collects and displays statistics. For access, StrataView Plus operates in LAN mode or telnet mode. (As of Release 8.0, access through the serial port is no longer possible.) Refer to the *Cisco StrataView Plus Operations* manual for more information.

Powering Up the Control Terminal

After the node receives power and correctly starts up, the terminal screen appears as shown below. If the screen is blank or does not display the initial screen, check all connections to the node, and make sure the terminal and node are receiving power. If the connections are correct, press the Delete key a few times or cycle the terminal power.

```
gamma          TRM  YourID:1          IPX 16    9.1          Aug. 15 1997  13:47 CST
```

```
Enter User ID:
```

The User Command Screen Layout

The screen has three areas. The top line of the screen (status line) displays the node name, current user name, software revision level, date, time and time zone. If the date and time have not been configured on the node, the screen states this.

The middle part of the screen shows the information returned by the executed commands. This could be, for example, configuration or statistical information.

The bottom area of the screen displays prompts for the next command or the current command parameters. As the system receives the entered parameters, it duplicates them above the command entry line to serve as a record of the entries. The bottom area also shows the command last entered.

All command screens eventually time out. This includes dynamically updated screens such as the display for the **dspbob** command. Furthermore, if sufficient time passes, the user is logged out.

Entering a Command

This section describes how to enter a command for those who are unfamiliar with Cisco WAN switch equipment. It also describes the on-line help for the commands.

Each user command can have one or more privilege levels. Entering a particular command is possible for a user at the same or higher privilege of the command. Each definition in this manual shows the privilege or range of privileges for the command. Most commands are not case-sensitive.

When the **Next Command** prompt is at the bottom of the screen, the system is ready for a new command. Some commands do not require parameters. These usually are commands for displaying information. Display commands often have no required parameters but have one or more optional parameters for changing the scope of displayed information. Commands that require parameters

usually prompt for each parameter. To abort a command for any reason, press the Delete key. More information for altering command line entries appears in the forthcoming section called “In case of a mistake.”

The general syntax is *command* <parameter(s)> [optional parameter(s)]. When a command definition displays actual parameters, the required parameters appear within the arrow heads (<>). If the list of command parameters is too long, the command definition’s “Syntax” field just shows “parameters,” which means the parameters are available only in the parameters table for the definition. For information on the format of system resource numbering, see the forthcoming section titled “How network trunks, lines, and channels are numbered.”

Users who are not familiar with the system can use the on-line help feature to become familiar with the categories of commands and obtain syntax information on a command. Seven categories of commands exist. The figure below lists them. To enter a command from the menu, do the following:

Step 1 At the **Next Command** prompt, either press the Escape key or enter the word **help** or a question mark. A list of command categories appears as in the example below.

```
gamma          TRM   YourID:1          IPX 16    9.1      Aug. 15 1997 13:47 CST
```

```
All commands fall into one (or more) of the following categories:
```

```
Control Terminal
Configuration
Lines
Network
Connections
Cards
Alarms and Failures
```

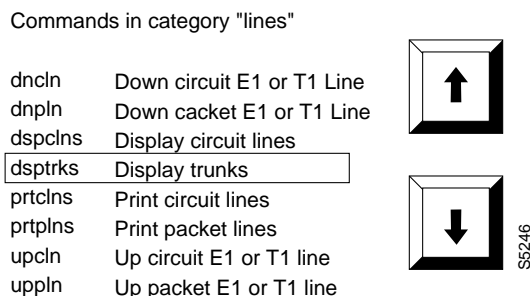
```
This Command: ?
```

```
Use cursor keys to select category and then hit <RETURN> key:
```

Step 2 Use the up/down arrow keys to select a command category, then press Return. A listing of all the commands in that category appears. (The next example is from the “line” category of commands.)

Step 3 Use the cursor key to select the command you want to enter (**dsprks** for example), then press the Return key. The selected command appears on the screen, and the system prompts you for any additional parameters that are required to complete the command.

Figure 1-1 Entering a Command



A faster way to enter a command, using fewer keystrokes, is to enter the command on the command line, then press the Return key. The system prompts you for any additional parameters required to complete the command. The fastest way to enter a command, using the fewest keystrokes, requires that you know the command along with the necessary parameters. Enter the command name and all of the required parameters in the correct format, then press the Return key.

About Command Categories

The command category menu is listed when you press the Escape key. The commands are organized into seven categories. (These categories are not the categories used to organize this manual.)

Table 1-1 lists and describes the command categories.

Table 1-1 Command Categories

Category	Description
Control Terminal	These commands let you configure your password, serial port and printer functions, use the help facility, establish virtual terminal connections, and create and edit jobs.
Configuration network and line timing.	These commands configure voice and data channels, and display network configuration.
Lines	These commands activate and deactivate lines and display line status.
Network	These commands add and delete trunks, configure a node name, and display and print network status.
Connections	These commands add, delete, and display circuit (voice and data) and FastPacket data channel connections, configure network routing and connection characteristics (Frame Relay and ATM), and perform connection.
Cards	These commands activate, deactivate, and reset printed circuit cards, and display power supply status.
Alarms and Failures	These commands display, print, and clear alarms, errors, and network history. They also configure alarm thresholds.

Aborting a Command

You can abort any command by pressing the **DELETE** key [on terminals without a DELETE key, you may need to type SHIFT-BACKSPACE or some other key(s) to perform the DELETE function]. The **Next Command:** prompt appears at the bottom of the screen indicating that you can enter another command. The command you aborted appears in low intensity letters on the screen after the **Last Command:** prompt.

About Command Names

Most of the command names follow a descriptive verb and noun format. For example, the **addcon** command adds a connection, the **delcon** command deletes a connection, and the **dspcon** command displays information about a connection. Table 1-2 lists the command-related abbreviations.

Table 1-2 Command-Related Abbreviations

Format	Mnemonic	Descriptor
Verb	add	Add
	bye	Bye
	clr	Clear
	cnf	Configure
	cpy	Copy
	del	Delete
	dn	Down
	dsp	Display
	edit	Edit
	grp	Group
	help	Help
	prt	Print
	red	Redraw
	reset	Reset
	run	Run
	stop	Stop
	switch	Switch
tst	Test	
Noun	adv	Adaptive voice
	ait	AIT
	alm(s)	Alarms
	bob	Breakout box
	bus(es)	Bus(es)
	cd(s)	Card(s)
	ch	Channel
	clk	Clock
	cln(s)	Circuit line(s)
	cls	Class
	cnf	Configuration
	con(s)	Connection(s)
	congrp	Connection group
	cond	Conditioning
	cos	Class of service (COS)

About Command Names

Format	Mnemonic	Descriptor
Nouns (continued)	d	Data
	date	Date
	dfm	DFM
	dial	Dial
	dl	Dial type
	eia	EIA
	errs	Errors
	extlp	External loop
	fp	FastPAD
	fr	Frame relay
	ftc	FTC
	func	Function
	gn	Gain insertion
	grp(s)	Group(s)
	ict	Interface control template
	ip	IP
	job(s)	Job(s)
	lcn	Logical connection
	ln(s)	Line(s)
	load	Load
	loclp	Local loop
	log	Log
	mc	multicast
	msg	Message
	name	Name
	nw	Network
	ospace	Open space
	parm(s)	Parameter(s)
	port	Port
	pref	Preference
	prt	Printer
	pwr	Power
	rcv	Receiver
	red	Redundant
	rmtlp	Remote loop
	rts	Routes
	scr	Screen
	seg	Segment
	sig	Signal

Format	Mnemonic	Descriptor
Nouns (continued)	slot	Slot
	snmp	SNMP
	src(s)	Source(s)
	st	Status
	stats	Statistics
	stby	Standby
	sys	System
	term	Terminal
	tmzn	Time zone
	tp	Type
	trig	Trigger
	trk(s)	Trunk(s)
	user	User
	utl	Utilization
	xmt	Transmit
	yred	Y-cable redundancy

Command Shortcuts

When you enter a command, it displays next to the **Last Command:** prompt at the bottom of the screen. To copy the command to the new command line, press the **Ctrl** and **A** keys simultaneously. To execute the previous command, you can edit the command line and then press the Return key. You can also enter an exclamation mark (!) followed by the first letter or letters of a previous command and press the Return key. For example, to repeat the dspcons command:

Last Command: dspcons

Next Command: **!dsp**

Press the **RETURN** key. You can use the **Display Command History** (.) command to display the 12 most recently executed commands:

Step 1 Type . (a period) and press Return. A numbered list of commands displays. In the following example, the most recently executed command is numbered 1.

```

12:
11:
10:
9:
8:
7:prtscrn
6:addcon 12.1 alpha 12.1 v
5:delcon 12.1
4:cnfport a 1200 n 8 1 x x n
3:cnftime 17 19 34
2:redscrn
1:help

```

Step 2 Type the number of the command you want to re-execute, then press the Return key. The command displays after the **Next Command:** prompt. You can press the Return key to execute the command, or you can edit the command line and then press the Return key. Whenever you end a terminal session by signing off (with the **bye** command), the command list is cleared.

In Case of a Mistake

Before you press Return, you can use control keys to edit a typed command. Table 1-3 lists the control key you can use to edit information on the command line. Not all terminals have the same key characters. If the exact key is not available, determine which key performs the function.

Table 1-3 Keys for Editing the Command Line

Function	Keys	Cursor Movement
Move the cursor	Ctrl-B	Moves the cursor left one word.
	Ctrl-F	Moves the cursor right one word.
	Ctrl-L	Moves the cursor right one character.
	Ctrl-G	Moves the cursor left one character.
	Arrows	Moves the cursor in the direction of the arrow.
Delete	Ctrl-W	Deletes a character.
	CHAR DEL	Deletes a character.
	Ctrl-H	Moves the cursor left one character and deletes that character.
	Ctrl-D	Deletes all characters from the cursor position to the end of the line.
	Ctrl-X	Deletes a line.
	BACKSPACE	Moves the cursor left one character and deletes that character.
Insert	Ctrl-I	Toggles insert mode.
	TAB	Toggles insert mode.
	CHAR INSERT	Toggles insert mode.
	Ctrl-^	Inserts line.
Miscellaneous	*	Leaves the data in this field as it is displayed and go to the next field.
	DELETE	Aborts command.
	Ctrl-M	Carriage return.
	RETURN	Carriage return.
	Ctrl-S	Stops the data flow from the node to the terminal screen.
	Ctrl-Q	Restarts the flow of data from the IPX.
	Ctrl-A	Copies the last command line.
	! (..)	(The exclamation mark followed by the first characters or character of a command, brings that command back to the command line.)

Access Privileges

Access to the commands is password protected. To access the commands, type your **user ID** and **user password** at the log-in prompts. Each user is assigned a privilege level by the System Manager which determines what commands you can use. There are six user privilege levels, ranging from 1 to 6. Level 1 has access to all the commands and level 6 has access to the fewest commands. A given privilege level has access to all levels below it. For example, level 3 has access to levels 3 through 6. The privilege level for each command is part of the command summary. User ID and passwords are case-sensitive.

Commands Supported by Release 9.1

The screens and examples in this manual come network equipped with BPX, IPX, and IGX nodes with both narrowband (T1 and E1) trunks and broadband (DS3 and OC3) ATM trunks. IPX and IGX nodes run T3, E3, T1, E1, OC-3 and IMATM services.

Commands associated with optional software features function only if the option has been purchased and activated for each node in the network. Optional features are activated from the Cisco TAC. The features that fall into this category are:

- Data Frame Multiplexing
- Adaptive Voice
- Frame Relay
- ForeSight
- Frame Relay ForeSight
- Configuration Save/Restore
- Frame Relay Network to Network Interface
- Multiple Virtual Terminals (VTs)
- Configuring an IPX or IGX node as an interface shelf
- Network Expansion

Help

The system software provides a help function for commands. The help consists of a list of all commands and a display of command syntax. Entering “help” or “?” with no parameters displays a list of the seven command categories (see the list that follows). Entering “help” and a command name displays the command syntax. Entering “help” and a few letters of a command name lists all commands containing these characters. For example, “help fr” lists all commands containing the letters “fr.” You can then select a particular command from this list for help information.

- Control terminal
- Configuration
- Lines
- Network
- Connections
- Cards
- Alarms and failures

The On-Line Help feature of StrataView Plus provides more detailed command information. Hypertext links allow you to navigate through command category lists, alphabetical indexes, and the command descriptions. Refer to the *Cisco StrataView Plus Operations* manual for more information.

The Numbering of Trunks, Lines, and Channels

The information contained in this manual allows you to setup, configure, and maintain traffic on trunks and lines. Table 1-4 lists the format conventions for the name of trunks, lines, and channels.

Table 1-4 **Formats of System Resource Names**

Trunk, line, or channel	Description
CDP/CVM Circuit Line and NTC/NTM Trunk	The number assigned to a CDP or CVM line (CLN) or an NTC or NTM trunk (TRK) is the slot number of the BC-T1 or BC-E1 back card in the physical slot where the CLN or TRK is connected to the IPX or IGX node. In the case of redundant pairs, it is the slot associated with the primary back card.
AIT Trunk	The number assigned to the backslot of the BC-T3 or BC-E3 backcard.
BPX Trunk Numbers	The number assigned to a BPX trunk (TRK) is the backslot number and port (1 - 3) of the BNI (slot.port; example, 2.1) card to which the T3 trunk cable is attached.
Voice Channel Numbers	A voice channel is specified by "SLOT.CH". Sets of voice channels are specified by "SLOT.CH-CH". The notation "SLOT" refers to the back slot number of a circuit line and "CH" refers to a channel (1-24 for T1 or 1-31 for E1). For example, "12.1" indicates channel 1 on circuit line 12, and "12.1-9" indicates channels 1-9 on circuit line 12.
Data Channel Numbers	Data channels are specified by "SLOT.PORT", where "SLOT" refers to the slot number of a data card, and "PORT" refers to a port on that data card. For example, "9.3" specifies port 3 on the data card in slot 9. The notation "9.1-4" refers to ports 1-4 on that card. The range of port numbers is from 1 to 4 for SDI and DDS data cards. An appended "a", for example; 11.1-5a, indicates the channels are configured to use the super-rate alternating channel feature.
Frame relay channel numbers (local addressing)	<p>In the local addressing convention, frame relay channels are specified by "SLOT.PORT.DLCI", where "SLOT" refers to the slot number of an FRP, "PORT" refers to a port on the FRP card, and "DLCI" is the local data link connection identifier. The range of port numbers is from 1 to 4. For example, the following addcon command at alpha:</p> <pre>addcon 6.1.101 beta 4.1.102 2</pre> <p>The command adds a connection between alpha and beta. The user device at alpha refers to this connection using the local DLCI of 101. The user device at beta refers to this connection using the local DLCI of 102. The DLCIs have local significance only. With local addressing, the same DLCI can be used again, but not for more than one destination from the same port. For example, the following adds another connection from alpha port 6.1:</p> <pre>addcon 6.1.100 gamma 6.2.102 2</pre> <p>In this case, a DLCI of 100 is used at alpha. A DLCI of 102 can be used at gamma as well as at beta, because the DLCIs have only local significance.</p>

Trunk, line, or channel	Description
Frame relay channel numbers (Global Addressing)	<p>In the global addressing, the format for frame relay channel specification is "SLOT.PORT.DLCI." However, each FRP or FRM port (and associated user device) is identified by a unique DLCI. No two ports in the network can have the same DLCI. For example, alpha port 6.1, gamma port 6.2, and beta port 4.1 could be assigned unique DLCIs of 79, 80, and 81 when adding connections, as in the following example:</p> <pre>addcon 6.1.80 gamma 6.2.79 2 (at alpha) addcon 6.1.81 beta 4.1.79 1 (at alpha) addcon 4.1.80 gamma 6.2.81 5 (at beta)</pre> <p>The user device at alpha refers to the connection between alpha and gamma, using the DLCI of 80 assigned to gamma. The user device at gamma refers to this connection using the DLCI of 79 assigned to alpha. The user device at alpha refers to the connection between alpha and beta using the DLCI of 81 assigned to beta. The user device at beta refers to this connection using the DLCI of 79 assigned to alpha. The user device at beta refers to the connection between beta and gamma using the DLCI of 80 assigned to gamma. The user device at gamma refers to this connection using the DLCI of 81 assigned to beta.</p> <p>For information on adding frame relay connections through a FastPAD, refer to the command descriptions in the online version of the 8.2 <i>FastPAD User's Guide</i>.</p>

Basic Commands

The *user interface* commands provide access to an IPX, IGX, or BPX system through the control terminal. These commands give help on use of the commands, display the 12 most recent commands entered into the system, connect to another node, and sign-off. These commands also give a means to clear, print, or redraw the screen. These commands are all simple to use and have no command parameters except the virtual terminal command (**vt**), in which the node name must be specified, and the help commands, in which a command character string must be entered.

Getting Help

Entering **help** or **?** displays command information. The **help** command can provide access to a general help menu or to information on a specific command. To access the general help menu, enter either **help** or **?**. Either of these commands displays the command category menu on the screen and prompts for a selection. Use the arrow keys to move the cursor to the correct category then press the Return key.

For information on a specific command, enter **help** or **?** followed by a command name. For example, enter the following for information on adding a trunk:

```
help addtrk
```

Press Return to display the information. Entering **help** or **?** followed by a character string displays all those commands containing the character string. For example, for a list of all commands that contain the string “fr,” enter the following:

```
? fr
```

Signing On

Signing on to the system is a two-step process requiring the entry of both a User ID and a password. The system administrator can provide a User ID and password for the network. Only the system administrator can assign and change User IDs. Once a password is assigned, a user can change his or her own password. For security reasons, periodically change the password. User ID and passwords are case-sensitive.

When the following prompt appears at the bottom of the initial screen, the system is ready for user login:

```
Enter User ID:
```

Entering a User ID and password gives access at a particular level of user-privilege. (Each command has one or more levels of associated user privilege.) For information on access privileges and passwords, refer to Chapter 13, “*Managing the Network*”. User IDs can have up to 12 characters. At the prompt, enter the User ID. The system responds with the following prompt:

Enter Password:

For initial sign-on, enter the password. The password does not appear on the screen. Upon correct User ID and password entry, the log-in is recorded by the event log, and the screen displays the following prompt:

Next Command:

The system is ready for command entry.

Logging Out

To log out, enter the **bye** command. When the terminal connection is local, this returns the display to the initial screen. To log out completely from a remote (virtual terminal) session, enter **bye** twice.

Clearing and Redrawing the Screen

Use the Clear Terminal Screen (**clrscrn**) to clear the screen. Use the Redraw Terminal Screen (**redscrn**) command to clear and redraw the screen. The **clrscrn** command clears any information displayed in the top portion of the screen. This information could consist of status displays on lines and connections or Help text. To clear the screen, enter **clrscrn**.

The **redscrn** command redraws the screen and updates the status lines. To make sure the status lines have been updated, enter the **redscrn** command. For example, to redraw a screen’s display with the latest statistics before printing the screen, enter **redscrn**.

Printing Screens

The Print Terminal Screen (**prtscrn**) command prints the current screen display. Verify that the node printer is correctly configured before attempting to print a screen. Upon **prtscrn** entry, the screen display goes to either a local or remote printer. To print all the information in a screen, enter **prtscrn**.

Accessing Physically Remote Nodes

The Make Virtual Terminal Connection (**vt**) command establishes a virtual terminal connections to a remote node. Once the connection is established, command entry and execution takes place as if the terminal were the local terminal on the remote node. The **vt** command lets network configuration take place from a central site. The only command that cannot run remotely is the **vt** command itself.

The privilege of user commands available through a **vt** connection is the same as that of the user who logged into a node with **vt**. To establish a virtual terminal connection with a remote node, enter **vt** and the name of the node name. For example, to **vt** to node “alpha,” enter:

```
vt alpha
```

The words Virtual Terminal appear on the screen at the lower left corner to signal the presence of a virtual terminal connection. The remote node name appears at the upper left corner of the screen. To terminate the virtual terminal connection and return to local terminal connection, enter the **bye** command.

The **bye** command has two separate functions:

- If the terminal connection is local, **bye** logs the user out of the system.
- If the connection is remote (a vt connection), the **bye** command breaks the remote connection and returns the terminal to local connectivity.

To log out of the system during a remote (vt) session, enter the **bye** command twice. Note that after a default period of four minutes of inactivity, the vt session automatically ends, and the connection reverts back to being local. The timeout is configurable.

If the multiple **vt** feature has been purchased, multiple users can log into a node with the **vt** command. Cisco personnel must activate this purchased feature.

List of Basic Commands

Table 2-1 lists the commands discussed in the previous sections. Descriptions of these commands make up the rest of this chapter.

Table 2-1 List of Basic Commands

Mnemonic	Description	Page
.	Display command history	2-3
help or ?	Help	2-5
bye	End user session	2-8
clrscrn	Clear screen	2-10
prtscrn	Print screen	2-11
redscrn	Redraw screen	2-12
vt	Make a virtual terminal connection	2-13

. (a period)

Displays the 12 most recently used commands. To re-use one of these commands, enter the associated number. The command appears on the command entry line, ready for editing or re-execution. Editing in this case means back-spacing through the command's arguments and typing in a new value or backspacing without typing a new value to restart the command at the cursor position.

Full Name

Display command history

Syntax

. (A period)

Related Commands

None

. (a period)

Attributes

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

Example 1

. (A period)

Description

Display the command history.

System Response

```
gamma          TRM   YourID:1          IPX 16    9.1    Aug. 15 1997 13:47 CST
```

```
Command history
```

```
12: dspcons
11: vt beta
10: dspcons
9: addcon 6.4 alpha 6.4 (.6
8: addcon 8.1.200 alpha 9.1.300 1
7: upfrport 8.1.200
6: dntrk 14
5: uptrk addjob
4: addjob
3: dspjobs
2: addjob
1: dspjobs
```

```
Last Command: .
```

```
Next Command:
```


help or ?

Displays a help menu. This command accesses the help routine in the system software. It provides:

- A short description of the command
- An indication of whether the command can be used in a job
- The command syntax

A more extensive, menu-driven, on-line help function exists within the StrataView Plus NMS. Consult the *Cisco StrataView Plus Operations Guide* for a complete description of the on-line help.

The ways to request help on commands are:

- Entering `help` or `?` without an argument lists the command categories. Selecting one of these categories (using arrow keys and Return) displays all the commands in that category. Commands in this list are selectable by using arrow keys then the Return key.
- Entering a command name displays help for that particular command.
- Entering a partial command name lists all commands that contain that character string. For example, `fr` indicates all commands (such as `cnffrport`) that contain "fr." You select a command in the list by using arrow keys to scroll to the command then pressing Return.

Full Name

Help command

Syntax

`? or help` [command name | character string]

Related Commands

None

Attributes

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

Example 1

help

Description

Display the help menu. (Without an argument, the help command shows the command categories.)

System Response

```
switchnow TN      SuperUser      BPX 15      9.1 Oct. 1 1997 14:14 GMT
```

All commands fall into one (or more) of the following categories:

```
Control Terminal
Configuration
Lines
Network
Connections
Cards
Alarms and Failures
Diagnostics
Debug
```

This Command: help

Use cursor keys to select category and then hit <RETURN> key:

Example 2

help dspbxsloterrs

Description

Display the syntax and other information for Display BXM Slot Errors (**dspbxsloterrs**).

System Response

```
switchwhat TN      SuperUser      BPX 15      9.1 Oct. 1 1997 14:16 GMT
```

```
dspbxsloterrs - Display BXM Slot Errors
Cannot be included in Jobs.
Usage: dspbxsloterrs [slot]
```

Last Command: help dspbxsloterrs

Next Command:

Example 3

help fr

Display all commands that contain the string “fr.” (These are the frame relay commands.) A list of all commands containing the letters “fr” appears on screen. Scroll to a command then press Return to display the related help screen.

Table 2-2 **help–Optional Parameter**

Parameter	Description
command	Specifies a command.
string	Specifies a character string as a search argument.

bye

Ends a local or remote terminal connection. With a local terminal connection, the **bye** command logs out the user. If a local terminal is inactive for a (default) period of 20 minutes, the connection is automatically broken. This is the equivalent of entering the **bye** command. With a remote terminal connection (**vt**), the **bye** command returns the terminal to the local node. After a (default) period of 4 minutes of inactivity, a remote terminal connection is automatically returned to a local connection. This is equivalent to entering the **bye** command.

Full Name

End user session

Syntax

bye

Related Commands

vt

Attributes

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

Example 1

bye

Description

End a current session from a local node. The local connection ends, and the initial sign-on prompt appears on the screen.

System Response

gamma TRM YourID:1 IPX 16 9.1 Aug. 15 1997 13:47 CST

Enter User ID:

clrscrn

Clears the terminal screen.

Full Name

Clear terminal screen

Syntax

clrscrn

Related Commands

redscrn, prtscrn

Attributes

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

Example 1

clrscrn

Description

Clear the screen.

System Response

```
pubsipx1      TN      SuperUser      IPX 16      9.1      July 15 1997 22:49 GMT
```

Last Command: clrscrn

Next Command:

prtscrn

Prints the information on the screen at the time the command is entered.

Full Name

Print terminal screen

Syntax

prtscrn

Related Commands

clrscrn, redscrn

Attributes

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

Example 1

prtscrn

Description

Send the information on the screen to the printer.

System Response

All information on the terminal screen is printed. If printing is successful, no status message appears. If the printer is unavailable, an appropriate status message appears.

redscrn

Redraws the screen. This command can be useful for communication that involves a modem. If data has become corrupted and caused erroneous characters on the terminal screen, **redscrn** clears them.

Full Name

Redraw the terminal screen

Syntax

redscrn

Related Commands

clrscrn, prtscrn

Attributes

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

Example 1

redscrn

Description

Clear the terminal screen and redraw the valid screen information.

System Response

The current screen reappears without erroneous characters.

vt

Establishes a virtual terminal connection to a remote node. A virtual terminal connection has the following properties:

- On the remote node, any command except the **vt** command can be executed.
- Multiple **vt** sessions is a purchasable option. With it, more than one user can **vt** to a node.
- During a virtual terminal session, jobs can be executed at any time.

During a **vt** session, the remote node name and date flash on the local terminal screen, and “Virtual Terminal” appears in the lower left corner. The **bye** command terminates a virtual terminal session and returns the terminal to local usage. After a default timeout of four minutes of inactivity, a **vt** connection automatically reverts to a local connection. This timeout is the equivalent of using the **bye** command.

Full Name

Make a virtual connection

Syntax

vt <nodename>

Related Commands

bye

Attributes

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

Example 1

vt sw115

Description

Establish a virtual terminal connection to the switch named “sw115.”

System Response

sw115 VT SuperUser BPX 15 9.1 July 15 1997 16:59 PDT

Last Command:

Next Command:

Virtual Terminal CD

Table 2-3 vt-Parameter

Parameter	Description
node name	Specifies the name of the remote node for the virtual terminal connection. If the specified node name is not valid, the returned message states that the “Node is unknown” and prompts for the correct node name. Also, the main area of the screen names the recognized nodes in the network to help determine the correct name.

Setting Up Nodes

This chapter describes the commands that let you set up an IPX, IGX, or BPX node. (You must set up each node before you build the network.) This chapter also describes how to:

- Configure a node name and time zone.
- Add and remove a network node.
- Add and remove an interface shelf in a tiered network.
- View a node's configuration.
- Specify Y-cable redundancy for cards in the node.
- Start a window session to an external device or specify an interface to an attached terminal.

Naming a Node

Before a node can be added to the network, a unique node name must be assigned. All nodes initially have the default name **NODENAME**. The node name consists of 1 to 8 printable characters (beginning with a letter), and cannot contain spaces. If you are naming the node after a city or place that contains more than eight characters, you will have to abbreviate the name for use as a node name. The name must be unique across the network. To assign the node the name of **alpha**, enter:

```
cnfname alpha
```

To change a node name, do the following:

Step 1 Sign on to (or establish a virtual terminal connection with) the node whose name you want to change.

Step 2 Change the name of the node using the **cnfname** command:

The name of the node you are connected to changes to the new name. This new name is distributed automatically to other nodes in the network.

Configuring the Time Zone

Each node must have a *time zone*. To set the time zone for the node to Greenwich Mean Time, for example, enter:

```
cnftmzn GMT
```

Removing a Trunk From the Network

Since Rel. 7.0 Packet Lines are referred to as **Trunks**. Use the letters “**trk**” in all commands referring to packet lines. To remove a trunk from the network, do the following.

- Step 1** Sign on to (or establish a virtual terminal connection with) the node.
- Step 2** Delete all packet (trunk) lines attached to the node using the **deltrk** command. For example, to delete line 5, enter: **deltrk 5**.

Adding an Interface Shelf

An *interface shelf* is a non-routing device that drives ATM cells to and from a BPX or IGX routing hub in a tiered network. (An interface shelf is also known as a feeder shelf.) An interface shelf is either an IPX or IGX node configured as an interface shelf or an MGX 8220 shelf.

For an IPX or IGX node to serve as an interface shelf, personnel in the Technical Assistance Center (TAC) must first configure it for that purpose because tiered network capability is a purchased option. Furthermore, an interface shelf must be configured through the **cnftrk** command to use STI cell headers and BPX Addressing Mode (BAM). Before you can add an MGX 8220 shelf to a tiered network, the shelf must be an available resource in the network. (For instructions on how to bring up an MGX 8220 shelf, see the MGX 8220 documentation.)

To add an interface shelf, use **addshelf**. See Figure 3-7 for an illustration of the command sequence for setting up an interface shelf. To delete a feeder shelf, use **delsshelf**. To view conditions on a feeder trunk, use **dspnode**. Note that **addshelf** and **addtrk** are mutually exclusive commands.

IPX/AF is the designation of an IPX node serving as an interface shelf. IGX/AF is the designation of an IGX node serving as an interface shelf. Display commands such as **dspnw** and **dspnode** display these designations. The **dspnode** command identifies the hub and feeder nodes and shows the alarm status. The designation for an MGX 8220 shelf serving as an interface shelf is AXIS.

Specifying Card Redundancy

You can set up port redundancy by installing two identical front and back card sets, connecting them with a Y-cable on each paired port, then specifying redundancy with the **addyred** command.

Redundancy applies to the entire card and is not port or line-specific. The commands that apply to Y-cable redundancy are

- **addyred**
- **delyred**
- **dspyred**
- **prtyred**

During normal operation, the primary set is “active” and carrying traffic, while the secondary set is in “standby.” The configuration of the primary set is the configuration for both the primary and redundant set. If you reset the primary cards or the primary cards becomes inactive for another reason, the secondary card set becomes active.

IGX card sets may consist of the following:

- HDM front card and SDI back card
- LDM front card and LDI back card
- FRM front card and an FRI back card
- UFM front card and a UFI back card
- FTM front card and an FTI back card
- UVM front card and a BC-UVI-2E1EC or BC-UVI-2T1EC back card
- CVM front card and a BC-T1 or BC-E1 back card
- NTM front card and a BC-E1 or BC-T1 back card
- BTM front card and a BC-E1, AIT-T3, or AIT-E3 back card
- ALM and a BC-UAI back card
- UXM and an MMF, SMF OC3, T3/E3, T1/E1 or IMA back card

IPX card sets may consist of the following:

- SDP front card and SDI back card
- LDP front card and LDI back card
- FRP front card and an FRI back card
- FTC front card and an FTI back card
- CDP front card and a BC-T1 or BC-E1 back card
- NTC front card and a BC-E1 or BC-T1 back card
- AIT front card and a BC-T3 or BC-E3 back card

BPX card sets may consist of the following:

- BCC front card
- BNI front card and T3, E3, or OC3 back card
- BXM front card and MMF, SMF, or SMFLR back card

- BME front card and MMF, SMF, or SMFLR back card
- ASI front card and T3, E3, or OC3/STM-1 back card

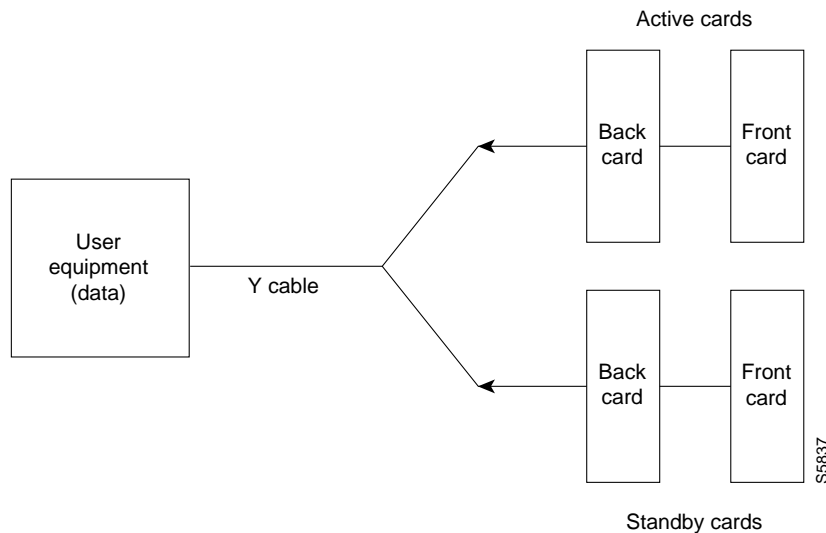
The following requirements apply to redundant card sets:

- The primary and secondary card sets must be identical.
- Secondary card sets must not be already active.
- Neither the primary nor secondary card set may already be part of a redundant card set pair.
- If an active card fails, is downed, or removed from the backplane, data automatically goes through the secondary set.
- All service cards on the IPX, IGX, and BPX nodes support Y-cable redundancy. (The trunk cards also support trunk redundancy. See Chapter 4, “Setting Up Trunks” for a description.)

Figure 3-1 illustrates the typical Y-cable connection of primary and secondary card sets. The singular end of a Y-cable (or base of the “Y”) goes to the user-equipment. One of the two connectors at the split end goes to the primary back card, and the other connector goes to the secondary back card.

Switching to the standby card occurs only if the secondary card set is in a “Standby” or a “Standby-T” state (but not “Failed”). See the **dspecds** definition for information on these states.

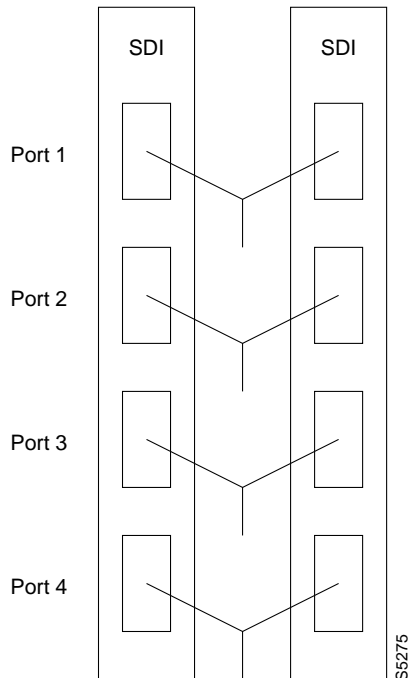
Figure 3-1 Y-Cable Connection



Note Terminating connections is possible at only a primary slot and not at a secondary slot. See the **addcon** description.

On multi-port card sets, each primary port is connected by a Y-cable to a secondary (redundant) port. Port 1 of the primary card set must be paired to port 1 of the secondary card set, and so on. Figure 3-2 illustrates the cabling for a multi-port card set.

Figure 3-2 Y-Cables on Multiple Ports



If the secondary card set becomes active, the primary card set goes into the standby state. For the primary card set to serve as a backup, it must be a complete set and not have failed status.

You can execute **addyred** even if the primary and secondary slots are empty. If cards reside in the primary and secondary slots, the system checks for card compatibility. Two types of incompatibility can occur: back card and jumper or cable. (On SDI, FRI, and FTI cards, jumpers determine whether a port is configured as DCE or DTE. On LDI cards, either a DCE or DTE adapter cable connects to the LDI port, as applicable).

If incompatibilities exist, the message “Y-Cable Conflict” appears on screen. Specific conflicts are listed in reverse video in the Y-Cable Redundancy screen. See the **dsyred** description for details. Redundancy on V.35 versions of the SDI and FRI cards requires special redundant jumpers. Always use the applicable Y-Cable Redundancy kit for a card.

Controlling External Devices

If your system is configured to control an external device, such as a multiplexer, you can establish a **window** session to it from the control terminal. While in a **window** session, any characters you type at the control terminal go to the external device for processing. Any characters generated by the external device appear on the control terminal screen.

The Window to External Device (**window**) command establishes a *window* session. You can use this command only if the external device connects to the local node. You can, however, enter the **window** command during a virtual terminal session so that you have a window session with any external device in the network. To start a window session, use the Virtual Terminal (**vt**) command to access the node cabled to the device, then invoke the **window** command. Before starting a window session, you must have configured the port and the port function with **cnfterm** and **cnftermfunc**. In addition, you must know whether the external window device is cabled to a node's Control Terminal (EIA/TIA-232) port or Aux Port (EIA/TIA-232) port. The format for the **window** command is:

```
window [a | c]
```

Enter an **a** if the external device is attached to the node's Aux Port or **c** if the device is attached to the node's Control Terminal port. The default for this parameter is Aux Port. To establish a **window** session with an external device attached to a node's Control Terminal port, enter:

```
window c
```

The system responds by redrawing the terminal screen. You can now enter commands and send data to the external device as if you were locally connected to its Control Terminal port. While in the **window** session, only commands used to control the external device are recognized. IPX/IGX/BPX commands are not recognized. You might notice a slight transfer delay in transmission, due to the IPX/IGX/BPX bundling of characters before transmitting them. Transfers are delayed until the transfer buffer is filled, or until the keyboard has been inactive for over 50 milliseconds.

To end a **window** session, enter an escape sequence. Escape sequences are one-to-eight characters in length and are configured with the Configure Terminal Port Function (**cnftermfunc**) command. For example, if you have specified "signoff" as the escape sequence in the Configure Terminal Port Function, enter the following to end the **window** session:

```
signoff
```

The default escape sequence is:

```
^^ (SHIFT 66)
```

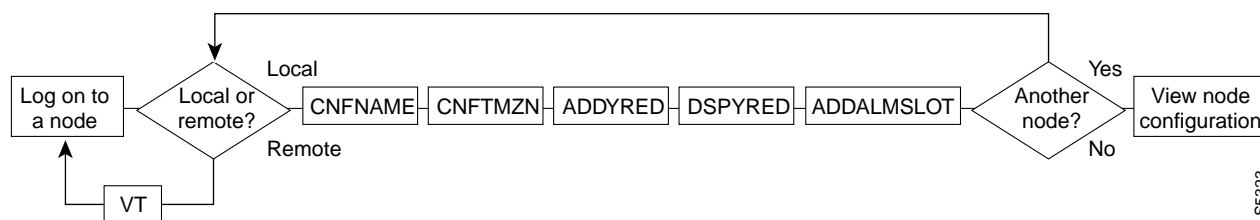
If this escape sequence does not work and you do not know the configured escape sequence, leave the keyboard idle for four minutes. After four minutes, the system terminates the window session.

Command Sequences for Setting Up Nodes

The sequences in Figure 3-3, Figure 3-4, Figure 3-5, Figure 3-6, and Figure 3-7 show the commands you execute to do the following node-related tasks:

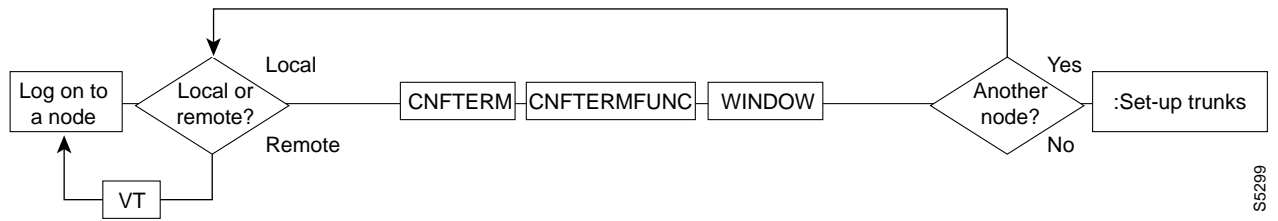
- Set up a node
- View information about the presence of the cards and system power
- Configure an interface for a control terminal that is connected to the node
- Remove a node from a network
- Add an interface shelf

Figure 3-3 Setting Up Nodes



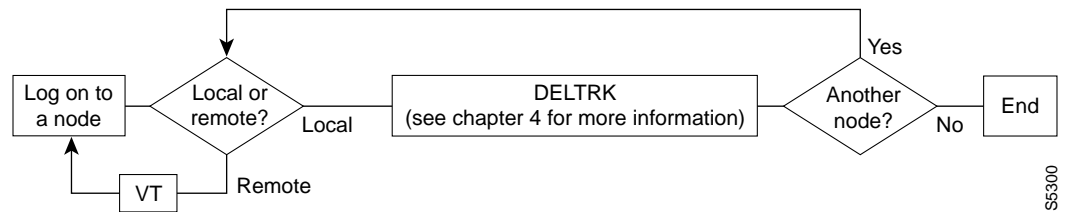
S5323

Figure 3-4 Viewing the Node Configuration



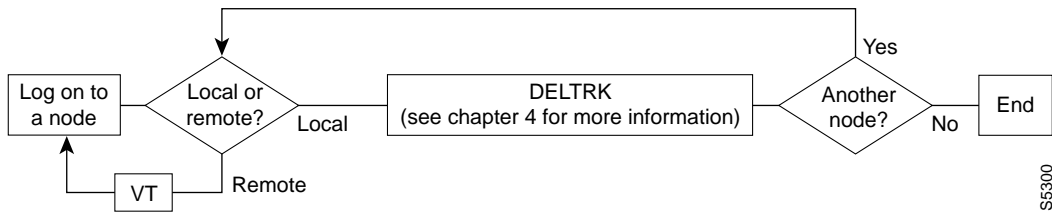
S5299

Figure 3-5 Configuring the Node Interface for a Local Control Terminal



S5300

Figure 3-6 Removing a Node From the Network



S5300

Figure 3-7 Add an Interface Shelf to the Network

Summary of Commands

Table 3-1 shows the command name and starting page for the description of each node command.

Table 3-1 Commands for Setting Up a Node

Mnemonic	Description	Page
addalmslot	Add an alarm slot	3-9
addshelf	Add a trunk between the hub node and access shelf.	3-11
addyred	Add Y-cable redundancy	3-13
cnfasm	Configure ASM card	3-15
cnfdate	Configure date	3-17
cnffunc	Configure system function	3-17
cnfname	Configure node name	3-22
cnfprt	Configure printing functions	3-24
cnfterm	Configure terminal port	3-26
cnftime	Configure time	3-28
cnftmzn	Configure time zone	3-28
delalmslot	Delete alarm slot	3-32
delsshelf	Delete a trunk between a hub node and access shelf	3-34
delyred	Delete Y-cable redundancy	3-36
dspasm	Display ASM card configuration	3-37
dspcd	Display card	3-39
dspcds	Display cards	3-43
dsplancnf	Display LAN configuration	3-47
dsplmistats	Display LMI Statistics	3-49
dspnds	Display nodes	3-51
dspnode	Display summary information about interface shelves	3-53
dsptermcnf	Display terminal configuration	3-55
dsptermfunc	Display terminal port configuration	3-57
dspprtcnf	Display print configuration	3-59
dsppwr	Display power	3-61
dspyred	Display Y-cable redundancy	3-63
prtyred	Print Y-cable redundancy	3-65
upcd	Up card	3-67
window	Window to external device	3-69
cnftime	Configure time	3-28

addalmslot

Enables the MAJOR and MINOR alarm indicators on an Alarm Relay Card (ARC) or Alarm Relay Module (ARM) front card. It also configures the slot to provide external alarms from the Alarm Relay Interface (ARI) back card. This command should be used at each node equipped to provide external alarm indications to the customer alarm reporting system. The slot specified for the ARC or ARM may be any shelf slot but is usually the slot farthest to the right.

Upon command execution, the system places the alarm card set in the active state and displays the current alarm status.

Full Name

Add alarm slot.

Syntax

addalmslot <slot number>

Related Commands

delalmslot, **dspalms**

Attributes

Privilege	1-4
Jobs	NO
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
addalmslot 16
```

Description

Enable alarm reporting from slot 16 in a node. (The system then displays alarm status.)

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 3 1997 14:27 MST

Alarm summary (Configured alarm slots: 16)
Connections Failed: None
Groups Failed: None
PLN Alarms: 1 Major
CLN Alarms: None
Cards Failed: 1
Missing Cards: None
Remote Node Alarms: 1 Major
Remote Domain Alarms: None

Last Command: addalmslot 16

Next Command:

Table 3-2 addalmslot-Parameters

Parameter	Description
slot number	Specifies the slot number of the alarm card set.

addshelf

Adds a trunk between a hub node and an interface shelf in a tiered network. The hub can be either a BPX or an IGX.

The interface shelf can be one of the following:

- An MGX 8220 shelf connected to a BPX node
- A Tag Switch Controller connected to a BPX node
- An IPX node connected to a BPX node that serves as a hub for the IPX/AF
- An IGX node connected to an IGX routing node that serves as a hub for the IGX/AF

The signaling protocol that applies to the trunk on an interface shelf is Annex G.

Because tiered network capability is a paid option, personnel in the Cisco Technical Assistance Center (TAC) must telnet to the unit and configure it as an interface shelf before you can execute **addshelf**.

Each IPX/AF, IGX/AF, or MGX 8220 shelf has one trunk that connects to the BPX or IGX node serving as an access hub. A BPX hub can support up to 16 T3 trunks to the interface shelves. An IGX hub can support up to 4 trunks to the interface shelves.

Before it can carry traffic, the trunk on an interface shelf must be “upped” (using **uptrk**) on both the interface shelf and the hub node and “added” to the network (using **addshelf**). Also, a trunk must be free of major alarms before you can add it with the **addshelf** command.

Full Name

Add a feeder shelf.

Syntax

```
addshelf <trunk> <shelf-type>
```

Note If you manage a tiered network through the command line interface, you can manage only Frame Relay interworking connections (ATFR) across the network. Three-segment connections for carrying serial data or voice between IGX/AFs is allowed, but you must manage them through StrataView Plus.

Related Commands

delshelf, **dspnode**, **dsprk**

Attributes

Privilege	1-4
Jobs	Yes
Log	Yes
Node	BPX, IGX
Lock	No

Example 1

```
addshelf 11.1 a
```

Description

Add trunk 11.1 as an MGX 8220 interface shelf. After you add the shelf, the screen displays a confirmation message and the name of the shelf.

System Response

```
nmsbpx23      TN      SuperUser      BPX 15      9.1 Aug. 16 1997 13:28 PST

                BPX Interface Shelf Information

Trunk  Name      Type      Alarm
 1.3   AXIS240  AXIS      OK
11.2   A242     AXIS      OK
```

```
This Command: addshelf 11.1
```

```
Enter Interface Shelf Type: I (IPX/AF), A (AXIS)
```

Table 3-3 addshelf-Parameters

Parameter	Description
trunk	Specifies the slot and port number of the trunk.
shelf type	On a BPX node, <i>shelf type</i> specifies the type of interface shelf when you execute addshelf . The choices are I for IPX/AF or IGX/AF, T for Tag Switching Controller, or A for MGX 8220. On an IGX hub, only the IGX/AF is possible, so <i>shelf type</i> does not appear.

addyred

Enables card redundancy for the IPX, IGX, and BPX cards. Use the **addyred** command to specify the slots of the primary and secondary (standby) cards that form the redundant pair. Refer to the section titled “Specifying Card Redundancy” at the beginning of this chapter for a list of supported card sets. Redundant card sets have the following characteristics:

- The primary and secondary card sets must be identical.
- The primary and secondary card sets must be in adjacent slots.
- Secondary card sets must not currently be active.
- Neither the primary nor secondary card set may already be part of a redundant set.
- Redundancy applies to the entire card and not specific trunks or lines.

In both the single and multi-port card sets, if the secondary card set becomes active, the primary card set serves as its backup (assuming the primary card set is complete and not failed). The **addyred** command can be used even if the primary and secondary slots are empty. If cards reside in the primary and secondary slots, the system checks for card compatibility. Two types of incompatibility can occur: back card and jumper or cable inconsistencies. (On SDI, FRI, and FTI cards, jumpers determine whether a port is configured as DCE or DTE. On LDI cards, either a DCE or DTE adapter cable connects to the LDI port. For descriptions of the jumper positions and cabling, see the *Cisco IPX Installation* manual or the *Cisco IGX 8400 Series Installation* manual.)

If incompatibilities exist, the message “Y-Cable Conflict” appears on the screen. Specific conflicts are listed in reverse video in the **dspyred** display. See the **dspyred** description for more information.

Full Name

Add Y-cable redundancy.

Syntax

addyred <primary slot> <secondary slot>

Related Commands

delyred, dspyred, prtyred

Attributes

Privilege	1–4
Jobs	No
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
addyred 25 26
```

Description

Add Y-cable redundancy to the SDP/SDI card sets in slots 25 and 26.

System Response

```
beta          TRM  YourID:1          IPX 32    9.1    Aug. 15 1997 14:27 MST

      Slot Other Front  Back  Channel Configuration
Slot Type Slot  Card  Card   1    2    3    4    5    6    7    8
25  Pri  26   SDP  RS232 DCE DCE DCE DCE
26  Sec  25   SDP  RS232 DCE DCE DCE DCE
```

Last Command: addyred 25 26

Next Command:

Table 3-4 **addyred-Parameters**

Parameter	Description
primary slot	Specifies the slot number of the primary card set.
secondary slot	Specifies the slot number of the secondary card set.

cnfasm

Lets you set various configurable parameters associated with the BPX Alarm and Status Monitor card in slot 15. Because this card always resides in slot 15, entering the slot number is unnecessary.

Full Name

Configure ASM card

Syntax

cnfasm

Related Commands

dspasm

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	BPX
Lock	Yes

Example 1

cnfasm

Description

Configure parameters for the ASM card.

System Response

D1.jea TRM SuperUser BPX 15 9.1 Aug. 30 1997 12:25 GMT

[1] Cabinet temp threshold:	50 C	[4] Polling interval (msec):	10000
[2] Power A deviation:	6 V	[5] Fan threshold (RPM):	2000
[3] Power B deviation:	6 V		

	ALM		ALM
[6] ACO button	-	[14] BPX card slot	-
[7] History button	-	[15] PSU A failure	Y
[8] Cabinet temp	Y	[16] PSU A removed	Y
[9] Power A volt	Y	[17] PSU B failure	Y
[10] Power B volt	Y	[18] PSU B removed	Y
[11] Fan 1 RPM	Y		
[12] Fan 2 RPM	Y		
[13] Fan 3 RPM	Y		

This Command: cnfasm

Which parameter do you wish to change:

cnfdate

Sets the date and time for the entire network. The node broadcasts the specified date and time to every node in the network. The time displayed at each node is consistent with the time zone where the node resides. (See the **cnftmzn** description.) For the first-time configuration of the date and time in a network, **cnfdate** requires all the parameters except for *second*. The default for *second* is 0. If a date and time already exist in the network, the defaults are the existing values at the moment you enter the **cnfdate** command. Note that changes to date and time alter the timestamps on StrataView Plus statistics.

Full Name

Configure data and time

Syntax

```
cnfdate <year> <month> <day> <hour> <minute> [second]
```

Related Commands

cnftime, **cnftmzn**

Attributes

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

Example 1

```
cnfdate 1997 12 16 13 54 11
```

Description

Set the time to 1:54:11 in the afternoon, December 16 1997. The system prompts:
“Warning: Changing time of day affects StrataView statistics timestamps

Continue?”

Enter “y” to continue or “n” to abort.” Upon a “y” response, the system further prompts with: “Hit RETURN to change clock, DEL to abort.”

System Response

```
alpha          TRM   YourID:1      IPX 16      9.1      Dec. 16 1997 13:54 PST  
  
YourID        1  
Sarah         5
```

Last Command: cnfdate 1997 12 16 13 54 11

Warning: Changing time of day affects StrataView statistics timestamps
Continue?

Table 3-5 cnfdate-Parameters

Parameter	Description
year	Specifies the year.
month	Specifies the month. The range is 1-12.
day	Specifies the day. The range depends on the month and can be 1-31.
hour	Specifies the hours. The range is 0-23. For example, enter 6 AM as 6 and 6 PM as 18.
minute	Specifies the minute of the hour. The range is 0-59. The default is 0.

Table 3-6 cnfdate-Optional Parameters

Parameter	Description
second	Specifies the seconds. The range is 0-59. The default is 0.

cnffunc

Enables or disables a specified node function. Each function has an index number. By entering the command, the index parameter, and the letter “e” or “d,” the function is either enabled or disabled.

Full Name

Configure system functions

Syntax

cnffunc <function_index> <e/d>

Related Commands

none

Attributes

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

Example 1

```
cnffunc 7 e
```

Description

Enables automatic card testing after card failure detection.

System Response

sw199 TN StrataCom IGX 16 9.1.w9 Apr. 9 1998 18:14 GMT

Index	Status	Function
1	Enabled	Automatic CLN/PLN Loopback Test on Local/Remote Alarms
2	Enabled	FDP Loopback button
3	Enabled	User Command Logging
4	Enabled	Automatic Card Reset on Hardware Error
5	Enabled	TXR Model D Download
6	Enabled	Card Error Record Wraparound
7	Disabled	Card Test After Failure
8	Disabled	Download From Remote StrataView
9	Disabled	Logging of conn events in local event log
10	Disabled	Logging of conn events in SV+ event log
11	Disabled	Logging SVC Connection Events
12	Disabled	Force Download From a Specific IP address
13	Disabled	CDP WinkStart Signalling

This Command: cnffunc

Continue? y

Index	Status	Function
14	Enabled	Logging of Bus Diagnostic Events in local event log

This Command: cnffunc

Enter index:

Table 3-7 cnffunc–Index Parameters

Index	Function	Description	Default
1	Automatic CLN/TRK Loopback Test on Local/Remote Alarms	A remote-end loopback is automatically set up on a failed line or trunk. Used to check the integrity of the back card alarm circuitry.	enabled
2	FDP Loopback button	For an IPX or IGX node, enables loopback button on SDP or HDM card faceplate. (Disable it to prevent accidental operation by contact.)	enabled
3	User Command Logging	All commands entered by the user is entered in the system log when enabled. When disabled, system log does not become so large but there is no audit trail of operator commands kept.	enabled
4	Automatic Card Reset on Hardware Error	The controller card (BCC, NPC, or NPM) issues a hardware reset to a card when firmware detects an error during normal operation. This allows the node to return a card to service after a firmware error.	enabled
5	TXR Model D Download	(Not used)	enabled
6	Card Error Record Wraparound	Allows the log entry for each card error to wrap for long entries. When disabled, only first ten failures are logged.	enabled
7	Card Test After Failure	Indicates card function selftests and background test should continue to be executed after a card has been declared as failing these tests.	disabled
8	Download from Remote StrataView Plus NMS	Allows a node to download software images from a StrataView Plus not directly connected to the node.	disabled
9	Logging of connection events in local event log	All connection event messages are entered in the system log when enabled. When disabled, system log does not become so large but there is no audit trail of connection events kept	disabled
10	Logging of connection events in StrataView Plus event log	All connection event messages are entered in the StrataView Plus event log when enabled. When disabled, StrataView Plus event log does not become so large but there is no audit trail of connection events kept	disabled
11	Force Download From a Specific IP address	Forces the node to only download software images from a StrataView Plus with the specified IP address.	disabled
12	Logging of SVC connection events	All SVC connection event messages are entered in the local event log when enabled. When disabled, local event log does not become so large but there is no audit trail of SVC connection events kept	disabled
13	CDP WinkStart Signalling	Toggles WinkStart signaling on the CDP.	disabled
14	Logging of Bus Diagnostic Events in local event log	All Bus Diagnostic event messages are entered in the local event log when enabled. When disabled, local event log does not become so large but there is no audit trail of Bus Diagnostic events kept	enabled

cnfname

Specifies the name by which a node is known within the network. It may be changed at any time. The new node name is automatically distributed to the other nodes in the network. Node names are case sensitive. For example, an upper-case “A” is not considered to be the same as a lower-case “a”. Duplicate names are not allowed in the same network. Node names may be configured from within a job sequence. If the node name is changed and the corresponding name in the job is not changed, the job will not function properly. In the following situations, the **cnfname** command cannot be executed:

- Another node is attempting to change the network topology by adding or deleting a trunk.
- Another node is notifying all nodes that it has been renamed. Another node is currently adding or deleting a channel connection in the network with the **addcon** or **delcon** commands.
- There is an unreachable node in the network.
- The name chosen is already being used for another node in the network.

Full Name

Configure node name

Syntax

cnfname <nodename>

Related Commands

cnfterm, **cnfpri**, and **window**

Attributes

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

Example 1

```
cnfname alpha
```

Description

The name changes to “alpha.” The network topology screen displays indicating the new name. See the **dspnw** description for more information on the network topology screen.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 15 1997 12:02 PST

NodeName	Alarm	Packet Line	Packet Line	Packet Line
alpha		10- 7/beta	14- 13/beta	
beta	MAJOR	7- 10/alpha	9- 10/gamma	13- 14/alpha
		15- 15/gamma	20- 11/gamma	
gamma	MAJOR	10- 9/beta	11- 20/beta	15- 15/beta

Last Command: cnfname alpha

Next Command:

cnfprt

Configures the printing function. To obtain local or remote printing at a node, a printer must connect to the AUX PORT. Also, the configuration must include the correct baud rate and printer type for the port. Use the **cnfterm** and **cnftermfunc** commands to do this.

The **cnfprt** and **cnftermfunc** commands interact. If the auxiliary port on the node is configured for either an External Device Window or the Network Management Log, a “local” printing configuration automatically changes to “no printing.” Printing is not possible because the auxiliary port is being used for another purpose.

Establishing a virtual terminal connection with a node does not affect the printing location established for the node that initiates the virtual terminal connection. For example, if node *alpha* is configured so that all alpha information goes to a printer at node *beta* and if alpha establishes a virtual terminal connection with node *gamma*, the results of print commands entered on the *alpha* keyboard still print at *beta*. Furthermore, this occurs regardless of the printing location configured for node *gamma*.

Full Name

Configure printing functions

Syntax

cnfprt <mode> <remote node name>

Related Commands

cnfterm, **dsptermfunc**

Attributes

Privilege	1–6
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
cnfprt
```

Description

Change the configured printing.

System Response

```
alpha          TRM   YourID:1          IPX 16  9.1    Aug. 15 1997 13:17 PST
```

```
Printing Mode
```

```
Remote Printing at beta
Local Printing
No Printing
```

```
This Command: cnfprt
```

```
Select Local (l), Remote (r), or None (n):
```

Table 3-8 **cnfprt-Parameters**

Parameter	Description
mode	Specifies the printing mode. Enter "L" for local printing, "R" for remote printing, and 'n' for no printing.
remote node name	Specifies the remote node whose printer is used for print commands issued by a user who is physically logged on to this node. This option is valid only when remote printing has been selected. A remote node is one within the domain, but not the node where the command is entered.

cnfterm

Configures data transmission parameters for the control and auxiliary ports. The IPX, IGX, and BPX nodes support two EIA/TIA-232 serial ports on the upper bus expansion card. The top port is called the Control Terminal port. The lower port is called the Auxiliary Port (AUX). Parameters can vary with the equipment connected to the port. The control port may connect to a control terminal, a direct-dial modem, or an external EIA/TIA-232 device. The auxiliary port may connect to either a printer or an external EIA/TIA-232 device. After you have set the data transmission parameters for a port, use the superuser command **cnftermfunc** to specify the equipment attached to the port. The configuration parameters must match the equipment physically attached to the port.

Full Name

Configure terminal port

Syntax

cnfterm <a/c> <baud> <parity> <num_data_bits> <num_stop_bits>

Related Commands

cnfterm, **cnfppt**, **window**

Attributes

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

Example 1

```
cnfterm
```

Description

Configure an auxiliary control port.

System Response

```
alpha          TRM  YourID:1          IPX 16 9.1    Aug. 15 1997 11:58 PST
```

```
Control port          Auxiliary port

Baud Rate:           1200          Baud Rate:           9600

Parity:              None          Parity:              None
Number of Data Bits: 8          Number of Data Bits: 8
Number of Stop Bits: 1          Number of Stop Bits: 1
Output flow control: XON/XOFF    Output flow control: XON/XOFF
Input flow control:  XON/XOFF    Input flow control:  XON/XOFF
Use DTR signal:      Yes          DTR signal:         Yes
```

```
This Command: cnfterm
```

```
Select Control port (c) or Auxiliary port (a):
```

Table 3-9 cnfterm-Parameters

Parameter	Description
a/c	Specifies the port to be configured, where “a” means auxiliary port, and “c” means control port.
baud rate	Specifies the baud rate. The rates are 1200, 2400, 4800, 9600, and 19200 bps.
parity	Specifies parity checking for character transmission to and from the port. Valid parity choices are “E” for even parity, “O” for odd parity, and “N” for no parity.
data bits	Specifies the number of bits to be sent for each transmitted character and the number of bits to be expected for each received character. A “7” indicates 7 bits for each character. An “8” indicates 8 bits for each character.
stop bits	Specifies the number of stop bits to be sent with each transmitted character and the number of stop bits to be expected with each received character. A “1” indicates one stop bit with each character; a “2” indicates two stop bits with each character.
output flow control	Specifies the output flow control. An “X” specifies XON/XOFF flow control; an “N” specifies no flow control.
input flow control	Specifies input flow control. An “X” specifies XON/XOFF flow control; an “N” specifies no flow control.
cts flow control	Configures cts flow control. An “X” specifies XON/XOFF flow control; an “N” specifies no flow control. This parameter should be turned off if working with modems on a BPX node.
use DTR	Specifies whether the node requires DTR to be asserted to allow or maintain a Login. A “Y” causes the node to require the presence of DTR before allowing a login. A “N” causes the node to ignore DTR.

cnftime

Sets the time for the entire network. The time is broadcast to all nodes in the network. The time displayed at each node is adjusted for the node's time zone. (See the **cnftmzn** command for more information.) This command can only be executed if the date for the network has already been configured using the **cnfdate** command. If hour, minute, or second is not entered, the current value is kept.

Full Name

Configure time

Syntax

cnftime <hour> <minute> <second>

Related Commands

cnfdate, **cnftmz**

Attributes

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

Example 1

```
cnftime 19 31 00
```

Description

Configure time to 7:31 in the evening. The system displays two warning prompts before it changes the time.

```
pubsigx1      TN      SuperUser      IGX 32      9.1      Sep. 5 1997  19:31 GMT
```

```
This Command: cnftime 19 31 00
```

```
Warning: Changing time of day affects StrataView statistics timestamps  
Hit RETURN to change clock, DEL to abort
```

Table 3-10 cnftime-Parameters

Parameter	Description
hour	Sets the time for the entire network. The time is broadcast to all nodes in the network. The time displayed at each node is adjusted for the node's time zone. (See the cnftmzn command for more information.) This command can only be executed if the date for the network has already been configured using the cnfdate command. If hour, minute, or second is not entered, the current value is kept.
min	Specifies the current minute. The range is 0-59.
sec	Specifies the current second. The range is 0-59.

cnftmzn

Configures the time zone for the node. Configuring the time zone for a node ensures that the node's time is correct for the local area regardless of the node at which the network date and time are set. Once configured, the time zone for the node is saved in battery-backed memory. After a power failure, a node's date and time are restored if at least one other node in the network has the current time and date.

Full Name

Configure time zone

Syntax

cnftmzn <timezone | g+/- hours>

Related Commands

cnfdate

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example

```
cnftmzn pst
```

Description

Configures the time zone to Pacific Standard Time.

System Response

```
alpha          TRM  YourID:1          IPX 16  9.1    Aug. 15 1997 13:19 PST
```

```
Last Command: cnftmzn pst
```

```
Next Command:
```

Table 3-11 **cnftmzn-Parameters**

Parameter	Description
time zone	<ul style="list-style-type: none"> • gmt (or g) Greenwich Mean Time • cst (or c) Central Standard Time • est (or e) Eastern Standard Time • mst (or m) Mountain Standard Time • pst (or p) Pacific Standard Time • yst (or y) Yukon Standard Time • cdt Central Daylight Savings Time • edt Eastern Daylight Savings Time • mdt Mountain Daylight Savings Time • pdt Pacific Daylight Savings Time • ydt Yukon Daylight Savings Time
hours from Greenwich Mean Time (GMT)	Specifies the difference in hours between local time and Greenwich Mean Time. The range is from -12 to +12 hours. Instead of entering the time zone, you can enter the hours from Greenwich Mean Time. For example, instead of entering pdt for Pacific Daylight Time, you could enter g-7, which is Greenwich Mean Time minus 7 hours.

delalmslot

Disables the ARC (IPX) or ARM (IGX) alarm indicators and ARI external alarms. See the **addalmslot** description for more information on ARC/ARM alarm relays and adding alarm slots.

Upon command execution, the system places the alarm card set in the standby state and displays the current alarm status.

Full Name

Delete an alarm slot

Syntax

delalm <slot number>

Related Commands

addalmslot, **dspalms**

Attributes

Privilege	1-4
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
delalmslot 11
```

Description

Disable the alarm indicators on the ARM card set in slot 11. (The system subsequently displays alarm status.)

System Response

```
pubsigx1      TN      SuperUser      IGX 32      9.1      July 16 1997 02:09 GMT
```

```
Alarm summary (Configured alarm slots: None)
```

```
Connections Failed:      None
Groups Failed:           None
TRK Alarms:              None
Line Alarms:             None
Cards Failed:            None
Missing Cards:           None
Remote Node Alarms:      1 Minor
Remote Domain Alarms:    None
```

```
Routing Network Alarms:  None
```

```
Cabinet Fan(s) Failed
```

```
FastPAD Node Alarms:     None
```

```
Last Command: delalmslot 11
```

```
Next Command:
```

Table 3-12 delalmslot-Parameters

Parameter	Description
slot number	Specifies the slot number of the alarm card set to activate.

delshelf

Deletes an interface shelf from a tiered network. The identifier for an interface shelf is either the trunk number or the name of the shelf. Normally, you execute **delshelf** only at the hub node, but on the IPX/AF or IGX/AF itself, **delshelf** has the single function of letting you turn off LMI if the trunk is not allowing communication. In contrast to the **deltrk** command, you can execute **delshelf** at any time if no connections terminate at the trunk.

Full Name

Delete an interface shelf.

Syntax

delshelf <trunk> | <shelf-name>

Related Commands

addshelf, **dspnode**

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
delshelf 4.1
```

Description

Delete shelf trunk 4.1 on an IPX/AF.

System Response

nmsbpx23 TN SuperUser BPX 15 9.1 Aug. 16 1997 13:26 PST

BPX Interface Shelf Information

Trunk	Name	Type	Alarm
1.3	AXIS240	AXIS	OK
11.2	A242	AXIS	OK

Last Command: delshelf A241

Shelf has been deleted

Next Command:

Table 3-13 delshelf-parameters

Parameter	Description
trunk or shelf name	Specifies the slot and port number of the trunk or the name of the interface shelf.

delyred

This command disables the Y redundancy for the card set in the specified primary slot number. If the secondary card slot is being used as the active slot at the time you use the **delyred** command, the system attempts to switch back to the primary slot. The substitution takes place only if the primary slot has a complete set of cards and the cards are in a Standby or a Standby-F state (not if they are Failed). See the **dspcds** description for information on card states. See the **addyred** and **dspyred** commands for more information on Y-cable redundancy.

Full Name

Delete Y-cable redundancy

Syntax

delyred <primary slot>

Related Commands

addyred, dspyred, prtyred

Attributes

Privilege	1-4
Jobs	No
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example

```
delyred 16
```

Description

Disable Y-cable redundancy at slot 16.

dspasm

Displays BPX node alarms that, when active, produce an external alarm output (relay closure). These alarms are associated with powering and cooling the node as well as a statistics count. For example, a minor alarm is generated when a fan speed drops below 2000 rpm. Since the single ASM card is always located in slot 15, no card slot need be entered for this command. To configure the ASM alarms, use **cnfasm** (a superuser command).

Full Name

Display ASM card

Syntax

dspasm

Related Commands

cnfasm

Attributes

Privilege	1
Jobs	No
Log	No
Node	BPX
Lock	Yes

Example

dspasm

Description

Display the ASM card parameters.

System Response

Dl.jea TRM SuperUser BPX 15 9.1 Aug. 30 1997 12:24 GMT

ASM Status:	Active	ASM Alarms
Statistics count:	7	Fan #1 RPM out of range
Statistics timeouts:	0	Fan #2 RPM out of range
Cabinet temperature:	21 C	Fan #3 RPM out of range
Power voltage A/B:	0.0 / 0.0 V	

PSU	Ins	Type	Rev	SerNum	Failure
A	N	N/A	N/A	N/A	N/A
B	N	N/A	N/A	N/A	N/A

FAN	1	2	3
	0000	0000	0000 RPM

Last Command: dspasm

Next Command:

dspcd

Displays the status, revision, and serial number of a card. If a back card is present, its type, revision, and serial number appear. The displayed information can vary with different card types.

Full Name

Display card

Syntax

dspcd <slot number>

Related Commands

dncd, dspcds, resetcd, upcd

Attributes

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

Example 1

dspcd 6

Description

Display status of the card in slot 6. The response shows a port capacity of 44, which is the maximum number of ports on a Port Concentrator Shelf. Therefore, the FRP in this case is an FRP-2.

System Response

minnow TN SuperUser IPX 8 9.1 Aug. 13 1997 08:00 PST

Detailed Card Display for FRP in slot 6

(Global RAM: 4 Mbytes)

Status:	Standby	(Front Card Supports V.35, X.21)
Revision:	FA06	(Front Card Supports Port Concentrator)
Serial Number:	165187	(Front Card Supports NNI, CLLM)
Port Capacity:	44	(Front Card Supports ATFR/CGW)
Backplane Installed		
Backcard Installed		
Type:	FRI-X21	
Revision:	P01	
Serial Number:	155558	

Last Command: dspcd 6

Next Command:

Example 2

dspcd 6

Description

The card is the trunk version of the ALM. The “B” next to Revision shows the card set is an ALM/B.

System Response

IGX32 TN SuperUser IGX 32 9.1 Oct. 12 1997 18:44 PST

Detailed Card Display for ALM in slot 6

Status:	Active	
Revision:	B0310	
Serial Number:	289417	
Backplane Installed		
Backcard Installed		
Type:	UAI-T3	
Revision:	HN	
Serial Number:	242007	

Last Command: dspcd 6

Next Command:

Example 3

`dspcd 5`

Description

Display information on the card in slot 5. The card is a UVM capable of CAS-switching.

```

wx175          TN      SuperUser      IGX 16      9.1 Sep. 23 1997 22:31 PST

Detailed Card Display for UVM in slot 5

Status:          Standby              (Front Card Supports CAS-switching)
Revision:        B0203
Serial Number:   336878
Integrated Echo Cancellor
Channels:        31
Backplane Installed
Backcard Installed
Type:           E1-2
Revision:       AB
Serial Number:  336728

```

Last Command: `dspcd 5`

Next Command:

Example 4

`dspcd 7`

Description

Display information on the card in slot 7. The card is a UXM with an OC3 backcard.

```

sw224          TN      SuperUser      IGX 16      9.0.n2      Aug. 27 1997 16:01 GMT

Detailed Card Display for UXM in slot 7

Status:          Standby
Revision:        EXB
Serial Number:   190212
Backplane Installed
Backcard Installed
Type:           OC3
Revision:       AH
Serial Number:  12345
Ports:          4
Line Mode:      SMF

```

Last Command: `dspcd 7`

Next Cand:

Example 5

dspcd 5

Description

Display information on the card in slot 5. The card is a UXM with an E1 backcard.

```
sw224          TN    SuperUser      IGX 16    9.0.n2    Aug. 27 1997 16:07 GMT
```

Detailed Card Display for UXM in slot 5

```
Status:          Active                (Front Card Supports SIW)
Revision:        AAB                    (Front Card Supports Cell Forwarding)
Serial Number:   190208                 (Front Card with GW installed)
Backplane Installed
Backcard Installed
  Type:          E1-IMA
  Revision:      EW
  Serial Number: 23456
  Ports:        8
  Line Mode:
```

Last Command: dspcd 5

Next Command:

Example 5

dspcd 5

Description

Display information on the card in slot 11. The card is a 2-port BME card with an OC-12 backcard.

```
GMT          sw60          TN    SuperUser      BPX 15    9.1      Feb. 5 1997 11:37
```

```
Status:          Active
Revision:        K0811
Serial Number:   324027
Queue Size:     228300
Support:        8129 Chns
                2 Pts, OC12
```

```
Backcard Installed
  Type:          LM-BXM
  Revision:      P02
  Serial Number: 240255
  Supports:     2 Pts, OC12, SMF Md
```

Last Command: dspcd 11

dspcds

Displays the cards in a shelf, front and back, with their type, revision, and status. For front and back card sets, the status field applies to the cards as a set. A letter “T” opposite a card indicates that it is running self-test. A letter “F” opposite a card indicates that it has failed a test. If lines or connections have been configured for a slot, but no suitable card is present, the display will list the missing cards at the top of the screen. If a special backplane is installed or if a card was previously installed, empty slots are identified as “reserved.”

For a two-shelf node, the screen initially displays only the upper shelf with a “Continue?” prompt. Typing “y” to the prompt displays the cards in the lower shelf. The command **dspcds** followed by the letter “L” (for lower shelf) displays card status for just the lower shelf. For an IPX 8 or IGX 8 node, the card information appears in only the left column. The status and update messages are as follows:

- Active Card in use, no failures detected.
- Active—F Card in use, failure(s) detected.
- Active—T Card active, background test in progress.
- Active—F-T Card active, minor failures detected, background test in progress.
- Standby Card idle, no failures.
- Standby—F Card idle, failure(s) detected.
- Standby—T Card idle, background test in progress.
- Standby—F-T Card idle, failure(s) detected, background test in progress.
- Failed Card failed.
- Down Card downed by user.
- Down—F Card downed, failure(s) detected.
- Down—T Card downed, failure(s) detected, background test in progress.
- Mismatch Mismatch between front card and back card.
- Update * Configuration RAM being updated from active control card.
- Locked* Old software version is being maintained in case it is needed.
- Dnlding* Downloading new system software from the active PCC adjacent node of
from StrataView Plus.
- Dnldr* Looking to adjacent nodes or StrataView Plus for either software to load
or other software needs you have not specifically requested.

In the preceding messages, an asterisk (*) means an additional status designation for BCC, NPC, or NPM cards. “F” flag in the card status indicates that a non-terminal failure was detected. Cards with an “F” status are activated only when necessary (for example, when no other card of that type is available). Cards with a “Failed” status are never activated.

Full Name
Display cards

Syntax
dspcds [I]

Related Commands
dncd, dspcd, resetcd, upcd

Attributes

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

Example 1

dspcds

Description

Display status on all cards.

System Response

```
IGX32                    TN    SuperUser                    IGX 32    9.1 Oct. 12 1997 18:39 PST

      FrontCard  BackCard
      Type Rev  Type      Rev  Status
1  NPM  A0205
2  Empty reserved for NPM
3  FRM  ESP  FRI-T1  AC  Active
4  Empty universal backplane
5  UXM  AA09 E1-IMA  EW  Active
6  ALM  B0310UAI-T3  HN  Active
7  UXM  EX09 OC3      AH  Standby
8  Empty universal backplane

      FrontCard  BackCard
      Type Rev  Type      Rev  Status
9  Empty universal backplane
10 Empty universal backplane
11 ALM  B0305UAI-T3  HN  Active
12 Empty
13 FRM  EEV  FRI-T1  AL  Standby
14 BTM  BFF  BTM-T3  P02 Standby
15 NTM  FHE  T1        AL  Standby
16 CVM  AFF  T1        AK  Active
```

Last Command: dspcds

Next Command:

Example 2

dspcds l

Description

Display status of cards on the lower shelf of an IPX 32 node (the option "l" means "lower").

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 15 1997 14:37 MST

Missing Cards: 1 ATM, 1 T3

FrontCard					BackCard					
Type	Rev	Type	Rev	Status	Type	Rev	Type	Rev	Status	
17	PCC	HDB		Standby	25	SDP	BA	RS232	AK	Active-T
18	Empty				26	SDP	BF	RS232	AK	Standby-F
19	FRP	DFB	FRI-V35	BC	Active-F	27	Empty			
20	ATM	HM03	Empty		Failed	28	Empty			
21	Empty				29	Empty				
22	CDP	AAB	Empty		Unavail	30	Empty			
23	Empty				31	Empty				
24	Empty	reserved for	SDP		32	Empty				

Last Command: dspcds l

Next Command:

Example 3

dspcds

Description

Display status of cards on a BPX 16 node. The 2 port BME card with OC-12 interface is in slot 11.

System Response

sw60 TN SuperUser BPX 15 9.1 Feb. 5 1997 11:36 GMT

Missing Cards: 1 BCC

FrontCard					BackCard						
Type	Rev	Type	Rev	Status	Type	Rev	Type	Rev	Status		
1	BNI-T3	CCF	T3-3	BE	Active	9	BNI-155	BDK	MMF-2	CM	Standby
2	Empty					10	Empty				
3	ASI-T3	BJF	T3-2	AA	Standby	11	BME-622	K08	11LM-BXM	P02AB	Active
4	ASI-E3	BMJ	E3-2	BE	Standby	12	ASI-155	BDK	MMF-2	AB	Standby
5	BNI-E3	CMF	E3-3	EY	Standby	13	Empty				
6	Empty					14	Empty				
7	BCC	BWF	LMBCC	AC	Active	15	ASM	ACA	LMASM	AC	Active
8	Empty	reserved for	Card								

Last Command: dspcds

Next Command:

Table 3-14 dspcds-Parameters

Parameter	Description
l	Directs the system to display status of the cards on just the lower shelf of an IPX 32 or IGX 32 node.

dsplancnf

Displays the addresses and configuration for the LAN Ethernet. The configuration fields shows the type of network capability and it is ready or unavailable. The **dsplancnf** display contains the following address fields:

Table 3-15 LAN Configuration Address Fields

<IPAdd>	Specifies the Internet address of the node used in the TCP/IP protocol
<IP subnet mask>	Specifies a 32-bit mask that contains information about the bit lengths of the subnet ID and host ID address fields. The format of this field uses 1s for the subnet ID field and 0s for the host ID address field as defined in the TCP/IP protocol. The default value (in decimal notation) is 255 255 255.0. This mask denotes both subnet ID and host ID fields as 8-bit fields.
<Max. LAN Transmit Unit>	BPX only: typical amount is 1500 bytes.
<TCPServicePort>	Specifies the node's service point used by the transmission control protocol (TCP).
<GatewayIPAddr>	Specifies the Internet gateway address

Full Name

Display LAN interface configuration

Syntax

dsplancnf

Related Commands

cnflan (a superuser command)

Attributes

Privilege	1-5
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	No

Example 1

dsplancnf

Description

Display the LAN configuration for the current node.

System Response

```
pubsbpx1      TN      SuperUser      BPX 15      9.1 June 11 1997 13:23 GMT
```

```
Active IP Address:      204.179.31.104
IP Subnet Mask:        255.255.255.0
IP Service Port:       5120
Default Gateway IP Address:  None
Maximum LAN Transmit Unit: 1500
Ethernet Address:      00.C0.43.00.21.F0
```

Type	State	Type	State
LAN	READY	TUNL	READY
TCP	UNAVAIL		
UDP	READY		
Telnet	READY		
TFTP	READY		
TimeHdlr	READY		
SNMP	READY		

Last Command: dsplancnf

Next Command:

dsplmistats

Displays Annex G LMI statistics for the trunk that connects an IPX/AF or IGX/AF interface shelf to the hub node. To execute this command from the access shelf itself, you must telnet to the IPX/AF or IGX/AF. The **dsplmistats** command can provide information to help you analyze problems that may arise while you set up a tiered network.

Full Name

Display Annex G LMI statistics

Syntax

dsplmistats (parameters depend on the type of node)

Note On an access shelf, the **dsplmistats** command takes no arguments. On an IPX or IGX node, **dsplmistats** requires a trunk number. On a BPX node, **dsplmistats** requires the slot and port number.

Related Commands

none

Attributes

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

Example

```
dsplmistats
```

Description

Display the LMI statistics for the trunk attached to the hub.

System Response

batman SuperUser IPX/AF 9.1 Nov. 30 1997 18:04 PST

```
Annex G LMI Statistics for slot:1 port:1
VPI.VCI: 0.0 Lmi enabled Lmi polling enabled
Invalid Pdu Rx: 0 Status Polling Timer (T396) : 10
Invalid Pdu Len Rx: 0 Status Enquiry Timer (T393) : 10
Unknown Pdu Type Rx: 0 Max Status Enquiry Retry (N394): 5
Unknown IE Type Rx: 0 Update Status Timer (T394) : 10
Bad Transaction Rx: 0 Max Update Status Retry (N395) : 5
Status Rx: 1384 Spc Polling Timer : 3
Status Enq Tx: 1384 Spc Retry Timer : 0
Status Enq Rx: 1384 Spc Retry Counter : 1
Status Tx: 1384 Node Status Retry Timer : 0
Status Ack Rx: 8 Node Status Retry Counter : 0
Update Status Tx: 8 Node Status Polling Timer : 2
Update Status Rx: 8
Status Ack Tx: 8
```

Last Command: dsplmistats

Next Command:

dspnds

Displays the name, type, and alarm status of all nodes within the network of the node executing the command. The remote node alarm is provided. You may use the **vt** command to reach the remote node and obtain the alarm information.

If a node is in alarm, its name is highlighted and the alarm type (major/minor), is displayed. A major alarm will be a flashing word. A junction node is identified with “Yes” printed under the Jct column.

Full Name

Display all nodes

Syntax

dspnds [+n | -p | -d | domain]

Related Commands

dspnw

Attributes

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

Example 1

dspnds

Description

Display the alarm status of all nodes within the network.

System Response

```
alpha          TRM   YourID:1          IPX 16  9.1    Aug. 23 1997 09:42 PST

NodeName Alarm
alpha         MAJOR
beta          MAJOR
gamma         MAJOR
```

Last Command: dspnds

Next Command:

Table 3-16 dspnds—Optional Parameters

Parameter	Description
+n	Specifies the node number. (Assigning a node number requires super user privilege.)
-p	Specifies that the display include the type of controller card in the node. The types are BCC, NPM, and so on.
-d	Specifies that the display include the type of node for each named node. The type is either "IPX," "IGX," or "BPX."

dspnode

Displays a summary of the interface shelves.

The **dspnode** command can isolate the shelf where an alarm has originated. For example, when you execute **dspalms**, the display indicates the number of shelves with alarms but does not identify the shelves. Therefore, execute **dspnode** on the hub node to determine which interface shelf generated the alarm.

The first example shows a screen display with **dspnode** executed on a BPX node. The second example shows a screen with **dspnode** executed on an IGX/AF. When executed on an IPX/AF or IGX/AF, **dspnode** shows the name of the hub node and the trunk number. Note that to execute a command from an IPX/AF or IGX/AF itself, you must either telnet to the shelf or use a control terminal attached to the shelf.

Full Name

Display node

Syntax

dspnode

Related Commands

addshelf, delshelf, dsptrk

Attributes

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

Example 1

dspnode

Description

Display information about the interface shelves (executed on the BPX hub node).

System Response

sw53 TN SuperUser BPX 15 9.1 July 21 1997 15:09 GMT

BPX Interface Shelf Information

Trunk	Name	Type	Alarm
1.1	sw89	IPX/AF	OK
1.2	SW93AXIS	AXIS	UNRCH
1.3	SW77AXIS	AXIS	MAJ
3.1	sw92	TSC	OK
3.2	sw91	IPX/AF	OK
3.3	sw90	IPX/AF	OK
4.1	sw24	IPX/AF	MIN
4.3	sw25	IPX/AF	MIN

Last Command: dspnode

Next Command:

Example 2

dspnode

Description

Display information about the trunk to the hub node (executed on an IGX/AF).

System Response

sw141 TN SuperUser IGX 16 9.1 Aug. 20 1997 07:23 PDT

Switching Shelf Information

Trunk	Name	Type	Alarm
3	sw45	BPX	OK

Last Command: dspnode

Next Command:

dsptermcnf

Displays the configuration for the control port and auxiliary port at a node. It includes all the asynchronous communications parameters that are specified by the **cnfterm** command.

Full Name

Display terminal port configurations

Syntax

dsptermcnf

Related Commands

cnfterm, **cnftermfunc** (a superuser command), **dsptermfunc**

Attributes

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

Example 1

```
dsptermcnf
```

Description

Display the terminal port configuration data.

System Response

batman TN SuperUser BPX 15 9.1 Aug. 26 1997 02:55 PST

Control port

Auxiliary port

Baud Rate: 9600

Baud Rate: 9600

Parity: None

Parity: None

Number of Data Bits: 8

Number of Data Bits: 8

Number of Stop Bits: 1

Number of Stop Bits: 1

Output flow control: XON/XOFF

Output flow control: XON/XOFF

Input flow control: XON/XOFF

Input flow control: XON/XOFF

CTS flow control: No

CTS flow control: Yes

Use DTR signal: Yes

Use DTR signal: Yes

Last Command: dsptermcnf

Next Command:

dsptermfunc

Displays the port functions configured by the **cnftermfunc** command.

Full Name

Display terminal port functions

Syntax

dsptermfunc

Related Commands

cnfterm, **cnftermfunc**, **dsptermcnf**

Attributes

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

Example 1

```
dsptermfunc
```

Description

Display the terminal port configuration data. The highlighted or reverse video items are the currently selected options.

System Response

swstorm TN SuperUser BPX 15 9.1 Aug. 23 1997 09:42 PST

Control port

- 1. VT100/StrataView
- 2. VT100

Auxiliary port

- 1. Okidata 182 Printer
- 2. Okidata 182 Printer with LOG
- 3. VT100
- 4. Alarm Message Collector
- 5. External Device Window
- 6. Autodial Modem

Last Command: dsptermfunc

Next Command:

dspprtcnf

Displays printing configuration for the node. The three printing modes, 'remote', 'local' and 'no' are listed and the currently selected mode is highlighted. If remote printing is selected, the node name where the remote printer is located also appears. If the name of the node is flashing, the node is unreachable.

The **dspprtcnf** command displays the current print configuration for the network where the command is entered.

Remote mode indicates that the log for the node prints on the printer at the listed remote node. Local mode indicates that the log for the node prints on the node's printer. No printing mode indicates that the log for the node does not print.

Full Name

Display print configuration

Syntax

dspprtcnf

Related Commands

cnfprt

Attributes

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

Example 1

dspprtcnf

Description

Display the print configuration. The example does not show the highlighted field.

System Response

sw83 TN SuperUser IPX 16 9.1 Aug. 22 1997 16:02 PST

Printing Mode

Remote Printing
Local Printing
No Printing

Last Command: dspprtcnf

Next Command:

dsppwr

Displays the current status of the power supply monitor, the current power supply configuration (which may consist of from one to four power supplies depending on node requirements), and the current cabinet temperature.

On the right side of the screen is displayed the internal cabinet temperature in degrees Centigrade and Fahrenheit. The temperature is displayed as a thermometer and the exact temperature appears at the top of the thermometer.

Full Name

Display power supply status

Syntax

dsppwr

Related Commands

dspcd, dspcds

Attributes

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

Example 1

```
dsppwr
```

Description

Display power supply status.

System Response

sw81 TN SuperUser BPX 15 9.1 May 21 1997 13:13 PST

Power Status

ASM Status: Active

Power voltage A/B: 0 / 49 V

PSU	Ins	Type	Rev	SerNum	Failure
A	N	N/A	N/A	N/A	N/A
B	Y	240V	0C	29959	None

Fan Status

FAN	1	2	3
	3300	3360	3240 RPM

Cabinet Temperature

22 71

C	60			140	F
e					a
n	50		--	122	h
t					r
i	40			104	e
g					n
r	30			86	h
a					e
d	20			68	i
e			--		t

Last Command: dsppwr

Next Command:

dspyred

Displays information for Y-cable pairings. A single slot can be specified, or all pairings are displayed when no slot is specified. Slot numbers appearing in high intensity indicate active card status. Front card, back card, and channel configuration conflicts appear in reverse video. A conflict occurs when the port interfaces are different for corresponding ports in a redundant slot pair. The output display contains the following information:

- First column (Slot) designates the slot of the displayed card.
- Second column (Slot Type) designates its status, Pri (primary) or Sec (secondary).
- Third column (Other Slot) designates the slot number of the associated Y-redundant card.
- Fourth column (Front Card) designates the type of card in the front slot.
- Fifth column (Back Card) designates the type of card in the back slot.

Remaining columns (Channel Configuration) describe the channel configurations when appropriate.

Full Name

Display Y-cable redundancy

Syntax

dspyred [slot]

Related Commands

addyred, delyred, prtyred

Attributes

Privilege	1-4
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	No

Example 1

```
dspyred
```

Description

Display Y-redundancy for all cards.

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 15 1997 14:28 MST

Slot	Type	Other Slot	Front Card	Back Card	Channel Configuration							
					1	2	3	4	5	6	7	8
25	Pri	26	SDP	RS232	DCE	DCE	DCE	DCE				
26	Sec	25	SDP	RS232	DCE	DCE	DCE	DCE				

Last Command: dspyred

Next Command:

prtyred

Prints the Y-cable redundancy configuration for an SDP, LDP, CDP, FRP, FTC, NTC or AIT card on an IPX node. On an IGX node, the cards are the HDM, LDM, CVM, FRM, FTM, NTM, BTM, ALM/B, UXM, UFM, and UVM. On a BPX node, the applicable cards are the BCC, ASI, and BNI. This command uses the same syntax and prints the same information as the **dspyred** command. See the **dspyred** command for details on the format of the command output.

Full Name

Print the Y-cable redundancy

Syntax

prtyred <start slot>

Related Commands

dspyred, **addyred**, **delyred**

Attributes

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

Example 1

```
prtyred
```

Description

Print Y-redundancy for all cards (no starting slot entered).

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 15 1997 14:28 MST

Slot	Type	Other Slot	Front Card	Back Card	Channel Configuration							
					1	2	3	4	5	6	7	8
25	Pri	26	SDP	RS232	DCE	DCE	DCE	DCE				
26	Sec	25	SDP	RS232	DCE	DCE	DCE	DCE				

Last Command: prtyred

Next Command:

upcd

Activates a card you have downed with the **dncd** command. (If a slot contains a complete card set, both the front and back card are upped. After a card set is upped, it is available as a node resource. When you activate a card, it comes up in either the *standby* or *active* state. The initial state depends on whether the network is ready to use the card immediately.

Full Name

Up card

Syntax

upcd <slot>

Related Commands

dncd, dspcds

Attributes

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

Example 1

upcd 10

Description

Activate the card in slot 10. After you activate the NTC in slot 10, its status is “Standby.”

System Response

```
pubsipx1      VT      SuperUser      IPX 16      9.1 Oct. 30 1997 21:15 GMT
```

```

      FrontCard  BackCard
      Type  Rev  Type      Rev  Status
1  NPC  ABC
2  NPC  ABC
3  SDP  CBC  V35      AF  Standby
4  Empty
5  FRP  DFR  FRI-V35  AA  Active
6  LDP  CC03  232-4   AC  Standby
7  Empty universal backplane
8  AIT  BBF  AIT-T3  AD  Active
      FrontCard  BackCard
      Type  Rev  Type      Rev  Status
9  Empty
10 NTC  ESC  E1        P06  Standby-F
11 Empty
12 Empty
13 CDP  ABE  T1        P06  Standby-T
14 Empty
15 NTC  EC02  Empty
16 Empty
      Unavail

```

Last Command: upcd 10

Next Command:

Table 3-17 upcd-Parameters

Parameter	Description
slot	Specifies the card slot number of the card

window

Provides an interface to an external device. To establish a session with an external device, first use the **cnftermfunc** command to designate the auxiliary port to serve as the external device window. To begin the session, enter the **window** command and specify the port. The control terminal screen subsequently clears, after which characters entered at the control terminal go to the external device and vice versa.

Because the IPX, IGX, and BPX nodes “bundle” characters together before transmitting them, a slight transfer delay occurs. Transfers are delayed until the transfer buffer is filled or the keyboard is inactive for over 50 milliseconds. To end the session, enter the escape sequence designated with the **cnftermfunc** command. The default for the escape sequence is ^^ (SHIFT 66).

The **window** command can be executed over a virtual terminal connection. This makes it possible to control external devices from a single point in the network. Devices such as Channel Service Units (CSUs), routers, channel banks and other devices with RS-232 console ports can be accessed remotely with this feature.

Full Name

Window to external device

Syntax

window <a/c>

Related Commands

cnfterm, **cnftermfunc**

Attributes

Privilege	1-4
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
window a
```

Description

Connect to a local router attached to the auxiliary port. The following dialogue shows the prompts and example responses.

System Response

```
Protocol [ip]:  
  
Target IP address: 192.9.202.1  
  
Repeat count [5]:  
Datagram size [100]:  
  
Timeout in seconds [2]:  
  
Extended commands [n]::  
  
Type escape sequence to abort. ^^  
  
Sending 5, 100-byte ICMP Echoes to 192.9.202.1, timeout is 2 seconds:  
  
.....  
  
Success rate is 100 percent  
  
left #
```

Table 3-18 window-Parameters

Parameter	Description
a	Specifies a window into external equipment attached to the node's auxiliary port. This is the default connection.
c	Specifies a window into external equipment attached to the node's control port.

Setting Up Trunks

This chapter describes the commands related to trunks. The contents in this chapter are as follows:

- Introduction
- A table showing the supported combinations of nodes, card sets, and line types
- Descriptions of trunk-related procedures:
 - Setting up a trunk
 - Setting up a virtual trunk
 - Reconfiguring a trunk
 - Removing a trunk
 - Displaying or printing a trunk configuration
 - Specifying trunk redundancy
 - Using substrate trunk interface control templates
 -
- A list of commands in this chapter with beginning page number
- Descriptions of the trunk commands

Introduction

After *nodes* are configured, the *trunks* have to be activated. Trunks are intra-node communication links in a network. A trunk can connect any combination of IPX, IGX, or BPX nodes. Trunk characteristics are:

- Physical line type: T1 (including fractional), E1 (including fractional), Subrate, E3, T3, or OC3 (STM1), OC12 with BXMs
- Communication technology: Asynchronous Transfer Mode (ATM) or FastPackets.

Table 4-1 shows the communication technology for each node type, card combination, and line type.

Table 4-1 Trunk Card Sets and Line Types

Node Type	Front Card	Back Card	Line Types	Technology
IPX	NTC	BC-T1	T1, T1 Fractional	FastPacket

Node Type	Front Card	Back Card	Line Types	Technology
IGX	NTM	BC-T1	T1, T1 Fractional	FastPacket
IPX	NTC	BC-E1	E1, E1 Fractional	FastPacket
IGX	NTM	BC-E1	E1, E1 Fractional	FastPacket
IPX	NTC	BC-SR	Subrate	FastPacket
IGX	NTM	BC-SR	Subrate	FastPacket
IPX	NTM	BC-Y1	Y1	FastPacket
IGX	NTM	BC-Y1	Y1	FastPacket
IGX	UXM	BC-UAI-2-155-SMF BC-UAI-4-155-SMF BC-UAI-4-155-MMF BC-UAI-4-155-EL1 BC-UAI-4T1-IMA DB15, BC-UAI-4E1-IMA DB15, BC-UAI-4E1-IMA BNC BC-UAI-8T1-IMA DB15, BC-UAI-8E1-IMA DB15, BC-UAI-8E1-IMA BNC	OC3 OC3 OC3 OC3 T1 E1 T1 E1 T1 E1 T1 E1 T1 E1	ATM
AIT	UXM	BC-6T3, BC-6E3 BC-3T3, BC-3E3	T3, E3	ATM
IPX	AIT	BC-T3, BC-E3	T3, E3	ATM
IGX	ALM/B	BC-UAI-IT3, BC-UAI-1E3	T3, E3	ATM
IGX	BTM	AIT-T3, AIT-E3, AIT-E2, AIT-HSSI, BTI-E1	T3, E3, E2, E1, HSSI	ATM
BPX	BNI	LM-3T3, LM-3E3	T3, E3	ATM
BPX	BNI-155, BNI-155E	2OC3-SMF or 2OC3-MMF	OC3 (STM1)	ATM
BPX	BXM-155-8	MMF-155-8 SMF-155-8 SMFLR-155-8	OC3 (STM1)	ATM
BPX	BXM-155-4	MMF-155-4 SMF-155-4 SMFLR-155-4	OC3 (STM1)	ATM
BPX	BXM-622-2	SMF-622-2 SMFLR-622-2	OC12 (STM4)	ATM

Setting Up a Trunk

Prior to executing the commands in this section, node setup must be complete (see the chapter titled “Setting Up Nodes”). Also, the front and back cards that support the proposed line type and communication technology must reside in the slot intended for the trunk.

- 1 Use the **uptrk** command to activate the trunk. This command activates the port so it can begin generating framing. It also determines whether the trunk is physical-only or a virtual trunk. The third place digit signals that the trunk is virtual. Virtual trunking is only supported on the BPX.

Each node can have a combined maximum of 32 virtual and physical trunks. The BNI-T3 or E3 can support up to 32 virtual trunks on 1 or both physical ports. A BNI-OC3 line can support up to 11 virtual trunks. Note that, like regular trunks, virtual trunks can carry high-priority traffic.

Use **uptrk** at each end of the trunk. When the trunk is up at only one end, the node detects the trunk as being in an alarm state (see **dsprtrks**). Upping the trunk at both ends clears the alarm.

- 2 Use the **cnftrk** command to override trunk default values. The **cnftrk** command is mandatory for virtual trunks but optional for physical trunks. For virtual trunks, the VPI must be changed to a non-0 value before execution of **addtrk**.

If **cnftrk** is used, identical changes must take place at both ends of the trunk. To display existing trunk parameters, use the **dsprtrknf** command. The configurable parameters are listed for each card type in the following table. (The possibilities are PKT for FastPackets, ATM cells, BNI if the trunk is a BNI card, or All.) Not all of these parameters apply to the BPX node. The BPX parameters are in a list that follows the table.

Once the trunk is configured and after the trunk is added (**addtrk**), certain parameters can be re-specified. For example, a period of trunk usage may reveal a need to change parameters to optimize trunk usage. Refer to the forthcoming section titled “Reconfiguring a Trunk” for details.

- 3 Use **addtrk** to add the trunk. Adding the trunk makes the trunk a usable resource, so connections can be added (**addcon**) for carrying traffic. Add a trunk at only one end of the trunk.

(To add an interface shelf in a tiered network, use **addshelf**. See the chapter “Setting Up Nodes.”)

Setting Up a Virtual Trunk

This section describes how to set up a virtual trunk using a BPX cloud. Virtual trunking is a purchased feature, so Cisco must enable it on each node you intend to use virtual trunking. Also, firmware levels on ASI and BNI cards must be current. For more information on virtual trunking, see the *Cisco WAN Switching System Overview*.

- Step 1** Set up cables as follows: in the cloud network, physically connect an ASI port to each BNI port that is likely to carry virtual trunks.
- Step 2** For each ASI port connected to a BNI virtual trunk port, use the following configuration sequence:

```
upln slot.port
```

```
upport slot.port
```

```
cnfport slot.port, and set the shift parameter to “N” for no shift.
```

- Step 3** Execute **addcon**. In the cloud network, add a virtual path ASI connection for each end of the virtual trunk that is to be routed through the cloud. An example of the syntax for this is:

```
addcon joker 5.1.1.* swstorm 6.2.10.*
```

where 5.1 and 6.2 are ASI ports hooked up and configured for virtual trunking. DACS connections are acceptable. Note that the third number is the VPI, which must correspond to the virtual trunk VPI configured with **cnftrk** in step 4. The CBR/VBR parameter must also correspond to the Virtual Trunk Type of the virtual trunk. For T3, set PCR to 96000 and CDTV to 24000 for the connection so that the ASI does not drop cells. Cisco recommends these values based on testing.

- Step 4** Configure BNI trunks. Take this step if the ATM cloud provider has assigned the VPC. On BNIs that connect to the cloud’s ASI ports, configure the virtual trunks, as follows:

```
uptrk slot.port.vtrk (If the cloud is already configured, the alarm on the virtual trunk should clear.)
```

```
cnftrk slot.port.vtrk
```

When you use **cnftrk**, make sure the virtual trunk type and VPI correspond to the existing ASI Virtual Path connections.

addtrk slot.port.vtrk

The parameters *slot.port.vtrk* on a BNI card can have the following values:

- Slot can be 1–6, 9–14.
- Port is the physical port number, which can be 1–3 for T3/E3 or 1–2 for OC3/STM1.
- Vtrk is the virtual trunk number, which can be 1–32 for T3/E3 or 1–11 for OC3/STM1.

Some Notes on Virtual Trunking in Release 9.1

To use virtual trunking on a BXM card in release 9.1.03, you must use the wraparound workaround solution. Contact the Cisco TAC (Technical Assistance Center) for this information.

When you configure a trunk, you can set the maximum number of user VCs that can traverse the trunk. The BXM will add 270 virtual circuits for controller card (CC) traffic, etc.

There is no concept of a maximum number of VCIs supported on a VPC (virtual path connection). All VCI addresses matching the specified VPI value will be transported if you specify the connection with an "addcon VPI.* format" command.

BNI cards support virtual trunking in release 8.2 and later switch software..

Reconfiguring a Trunk

This section describes how to change trunk parameters after the trunk has been added. After a trunk has been added, you can reconfigure some parameters without first deleting the trunk (**deltrk**). (See the list that follows.) All other changes to trunk parameters must follow trunk deletion. The parameters that are changeable *without* first deleting the trunk are:

- Restrict Control Card traffic ("PCC restrict")
- Pass sync
- Loop clock
- Statistical reserve
- Bursty data peak speed
- Bursty data peak average frame
- Idle Code
- User traffic
- Connection channels

To display the current trunk parameters, use **dsprkcnf**. If you can make all the needed parameter changes without deleting the trunk, execute **cnftrk**. Use **cnftrk** at both ends of the trunk.

To change parameters that first require trunk deletion:

- Step 1** Delete the trunk by executing **deltrk**. Use **deltrk** at one end of the trunk.
- Step 2** Execute **cnftrk** to reconfigure parameters. Use **cnftrk** at both ends of the trunk.
- Step 3** Execute **addtrk** to add the trunk. Use **addtrk** at only one end of the trunk.

Removing a Trunk

To remove a trunk:

- Step 1** Use the **deltrk** command to delete the trunk. If both ends of the trunk are reachable, perform this command at one end of the trunk only. Otherwise, this command must be performed at both ends. Connections using the deleted trunk that cannot be rerouted are automatically deleted.
- Step 2** Use the **dntrk** command to down the trunk. Execute **dntrk** at both ends of the trunk.

Displaying or Printing Trunk Configurations

The network trunk configuration can be displayed on the screen or printed on the printer in a one step process by using any one of the following commands.

- **dsptrks**—Displays the current trunk configuration and alarm status at a node.
- **prtrks**—Prints the current trunk configuration and alarm status at a node.
- **dspnw**—Displays all trunks for each node in a domain.
- **prtnw**—Prints all trunks for each node in a domain.

Setting Up ATM Trunk Redundancy

ATM trunk redundancy is the T3 and E3 trunk redundancy supported by the AIT, ALM/B, and BTM cards. Redundancy can exist between either an AIT card and BNI (BPX), a ALM/B and BNI, or a BTM and a BNI. Trunk redundancy cannot exist between IPX and IGX nodes. Also, virtual trunking and trunk redundancy are incompatible. Trunk redundancy uses the standard trunk cables rather than a Y-cable. (For all service card sets other than trunk cards, redundancy is managed through the Y-cable redundancy commands **addyred**, **delyred**, **prtyred**, and **dspyred**).

Trunk redundancy depends on the applicable commands, the trunk card in the adjacent slot, and the standard trunk cable. Trunk redundancy commands execute only on the IPX or IGX node. The BPX node does not require information regarding this feature. The following commands manage trunk redundancy:

- **addtrkred**—Sets up redundancy for a pair of AIT, BTM, or ALM/B cards.
- **deltrkred**—Deletes redundancy for a current redundant pair.
- **dsptrkred**—Displays all redundant ATM trunk pairs

Using Subrate Trunk Interface Control Templates

Subrate trunks use an Interface Control Template that specifies the configuration of an output control lead. The template defines which output lead is to be configured and whether the lead is asserted, inhibited, or follows a specified input source. A template for a subrate trunk can be configured individually or copied from the template of another subrate trunk.

Subrate trunk interface control templates are managed through the following commands.

- **cnftrkict**—Configures an interface control template for a subrate trunk.
- **cpytrkict**—Copies the template from one subrate trunk and applies to another trunk.
- **dsptrkict**—Displays the interface control template for a specifies line.
- **prtrkict**—Prints the interface control template for a specifies line.

Summary of Commands

Table 4-2 shows the full name and starting page for the description of each trunk command.

Table 4-2 List of Trunk Commands

Mnemonic	Description	Page
addtrk	Add trunk	4-7
addtrkred	Add trunk redundancy	4-9
cnfrsrc	Configure resources	4-11
cnftrk	Configure trunk	4-15
cnftrkalm	Configure trunk alarm	4-27
cnftrkict	Configure trunk interface control template	4-29
cpytrkict	Copy trunk interface control template	4-31
deltrk	Delete trunk	4-33
deltrkred	Delete trunk redundancy	4-35
dntrk	Down trunk	4-37
dspnw	Display network	4-39
dspphyslns	Display lines in an IMA trunk	4-39
dspphyslnstathist	Display statistics gathered for lines in an IMA trunk	4-39
dsprkbob	Display trunk breakout box	4-45
dsprkcnf	Display trunk configuration	4-47
dsprkict	Display trunk interface control template	4-54
dsprkred	Display trunk redundancy	4-56
dsprks	Display trunks	4-58
dsprkstats	Display trunk statistics	4-60
prtnw	Print network	4-64
prtrkict	Print trunk interface control template	4-66
prtrks	Print trunks	4-67
uptrk	Up trunk	4-68

addtrk

Adds a trunk between nodes. A trunk must be added to the network before it can carry traffic. Executing **addtrk** is necessary at only one of the nodes terminating the trunk. Before you add a trunk to the network, you must have activated (or “upped”) the trunk at both ends by using **uptrk**.

A trunk must be free of major alarms before you can add it. If you use **addtrk** to join two networks that were previously separate, the local node verifies that all node names and node numbers in both networks are unique before it adds the trunk.

You cannot add a trunk while any of the following conditions are true:

- Another node is attempting to change the network topology by adding or deleting a trunk.
- Another node is notifying all nodes that it has been renamed.
- Another node is currently adding or deleting a connection in the network with the **addcon** or **delcon** command.
- An unreachable node exists in the network.
- Connections are rerouting.
- The node names or the node numbers across the two networks are not unique. Use the command and optional parameter **dspnds +n** to see the node numbers.

When using the **addtrk** command, exercise caution when adding a new node to a network or one network to another network. With these particular operations, the user IDs and passwords may be replaced by those in the other network. Consult Customer Service before performing these operations.

Full Name

Add trunk to the network

Syntax

addtrk <slot.port>[.vtrk]

Related Commands

deltrk, **dsptrks**, **uptrk**

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

addtrk 7

Description

Add trunk between node beta slot 7 and node alpha slot 10.

System Response

```
beta          TRM   YourID:1          IPX 32    9.1    Aug. 3 1997 15:04 MST

PLN  Type      Current Line Alarm Status      Other End
 7   E1/32     Clear - Line OK                  alpha.10
 9   T1/24     Clear - Line OK                  gamma.10
13   T1/24     Clear - Line OK                  alpha.14
15   T1/24     Clear - Line OK                  gamma.15
20   T3/3      Major - AIT Missing              -
```

Last Command: addtrk 7

Next Command:

Table 4-3 addtrk-Parameters

Parameter	Description
slot.port	Specifies the slot and port number of the trunk to add.

Table 4-4 addtrk-Optional Parameters

Parameter	Description
vtrk	Specifies the virtual trunk number. This is only supported on the BPX. The maximum on a node is 32. The maximum on a T3 or E3 line is 32. The maximum on an OC3/STM1 line is 11.

addtrkred

Configures trunk redundancy on an ATM trunk. The **addtrkred** command specifies a backup trunk to the primary trunk. Applicable line types are T3 and E3. The redundancy scheme requires two sets of ATM trunk cards and two standard T3 or E3 cables (not Y-cables). Note the following characteristics of trunk redundancy:

- Applicable card sets are the AIT, BTM, and ALM/B connected to a BNI card set on a BPX node. (Trunk redundancy between an AIT, BTM, and ALM/B is not allowed.)
- Execute **addtrkred** on an IPX or IGX but not on the BPX side.
- Primary and backup card sets must be in adjacent slots.
- After a primary trunk failure clears, the traffic automatically returns to the primary card set.
- Trunk redundancy is not compatible with virtual trunking.

Full Name

Add trunk redundancy

Syntax

addtrkred <primary trunk> <secondary trunk>

Related Commands

deltrkred, **dsptrkred**

Attributes

Privilege	1–4
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
addtrkred 4 5
```

Description

Add bandwidth redundancy for the primary ATM trunk in slot 4 with backup from the ATM trunk in slot 5.

System Response

```
beta          TRM  YourID:1      IPX 32      9.1      Aug. 3 1997 15:15 MST  
  
ATM Line          Backup ATM Line  
4                    5
```

Last Command: addtrkred 4 5

Next Command:

Table 4-5 **addtrkred-Parameters**

Parameter	Description
primary trunk	Specifies the slot number of the primary trunk card set.
secondary trunk	Specifies the slot number of the secondary trunk card set as backup.

cnfrsrc

Use the **cnfrsrc** command to partition resources for AutoRoute PVCs and VSI-Tag Switching.

Full Name

Configure resource

Syntax

```
cnfrsrc <slot>.<port> <maxpvclens> <maxpvcbw> <partition> <e/d> <minvsilens> <maxvsilens>  
<vsistartvpi> <vsientvpi><vsiminbw> <vsimaxbw>
```

Related Commands

dsprsrc

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX
Lock	No

Example

```
cnfrsrc 4.1 256 26000 1 e 512 16384 2 15 26000 100000
```

Description

Configure the VSI partition for port 4.1.

System Response

```

n4          TN      SuperUser      BPX 15      9.1      Apr. 4 1998 16:40 PST
Port/Trunk : 4.1
Maximum PVC LCNS:          256      Maximum PVC Bandwidth:26000
Min Lcn(1) : 0 Min Lcn(2) : 0
Partition 1
Partition State :          Enabled
Minimum VSI LCNS:          512
Maximum VSI LCNS:          7048
Start VSI VPI:             2
End VSI VPI :              15
Minimum VSI Bandwidth :    26000      Maximum VSI Bandwidth :      100000

Last Command: cnfrsrc 4.1 256 26000 1 e 512 7048 2 15 26000 100000

Next Command:
    
```

Table 4-6 cnfrsrc-Parameters

Parameter	Description
slot.port	Specifies the BXM card slot and port number.
Maximum PVC LCNS	<p>The maximum number of LCNs allocated for AutoRoute PVCs for this port. The range is 1 to 256. 256 is the default. For trunks, there are additional LCNs allocated for AutoRoute that are not configurable.</p> <p>You can use the dspcd <slot> command to display the maximum number of LCNs you can configure using the cnfrsrc command for the given port. For trunks, “configurable LCNs” represent the LCNs remaining after the BCC has subtracted the “networking LCNs” needed. A trunk has 270 networking LCNs, or channels.</p> <p>For a port card, a larger number is shown, as compared with a trunk card. This is because a trunk uses 270 networking LCNs, as compared with a port card, which uses no networking LCNs.</p> <p>Setting this field to “0” would disable AutoRoute PVCs on the specified port.</p> <p>Note that you must specify a value greater than 0 for the Maximum PVC LCNS, Maximum PVC Bandwidth, and Maximum VSI LCNS parameters. Otherwise, you will not be able to create any AutoRoute connections on a BXM card. Also, if these parameters do not have values greater than 0, you will be unable to change the connection channel amount when you configure the BXM trunk using cnftrk.</p>
Maximum PVC Bandwidth	<p>Specifies the maximum bandwidth of the port allocated for AutoRoute use. The range is 0 to 352207. 0 is the default. You can configure the Maximum PVC Bandwidth value for ports, but not for trunks.</p> <p>Note that you must specify a value greater than 0 for the Maximum PVC LCNS, Maximum PVC Bandwidth, and Maximum VSI LCNS parameters. Otherwise, you will not be able to create any AutoRoute PVCs on the BXM card.</p>
Configure Partition	Answer yes or no to begin configuring resources for the partition.
Partition ID	Specifies the ID number of the partition. 1 is the default. Always use 1 in Release 9.1.
Enable Partition	Answer yes or no to enable your configured partition.

Parameter	Description
Minimum VSI LCNs	<p>The minimum number of LCNs guaranteed for this partition. The range is 1 to 256. 0 is the default. The VSI controller guarantees at least this many connection endpoints in the partition, provided there are sufficient free LCNs in the common pool to satisfy the request at the time the partition is added. When a new partition is added or the value is increased, it may be that existing connections have depleted the common pool so that there are not enough free LCNs to satisfy the request. The BXM gives priority to the request when LCNs are freed. The net effect is that the partition may not receive all the guaranteed LCNs (min LCNs) until other LCNs are returned to the common pool.</p> <p>You can increase this value dynamically when there are enough unallocated LCNs in the port group to satisfy the increase.</p> <p>You may not decrease the value dynamically. All partitions in the same port group must be deleted first and reconfigured in order to reduce this value.</p> <p>To avoid this deficit condition, which could occur with maximum LCN usage by a partition or partitions, it is recommended that all partitions be configured ahead of time before adding connections. Also, it is recommended that all partitions be configured before adding a VSI controller using the addshelf command.</p>
Maximum VSI LCNs	<p>The total number of LCNs the partition is allowed for setting up connections. The min LCNs is included in this calculation. If max LCNs equals min LCNs, then the max LCNs are guaranteed for this partition.</p> <p>Otherwise, (max - min) LCNs are allocated from the common pool on a FIFO basis.</p> <p>If the common pool is exhausted, new connection setup requests will be rejected for the partition, even though the maximum LCNs has not been reached.</p> <p>You may increase this value dynamically when there are enough unallocated LCNs in the port group to satisfy the increase.</p> <p>You may not decrease the value dynamically. All partitions in the same port group must be deleted first and reconfigured in order to reduce this value.</p> <p>Different types of BXM cards support different maximum values. If you enter a value greater than the allowed maximum, a message is displayed with the allowable maximum value.</p> <p>Note that you must specify a value greater than 0 for the Maximum VSI LCNs, Maximum PVC Channels, and Maximum PVC Bandwidth parameters. Otherwise, you will not be able to add any connections on a BXM card.</p>
Start VSI VPI	<p>By default the TSC (for example, the 7200 or 7500 series router) will use either a starting VSI VPI of 1 or 2 for tag switching, whichever is available. If both are available, a starting VSI VPI of 1 is used. The VPI range should be 2-15 on a BPX 8620 VSI. The VSI range for tag switching on the BPX 8620 is configured as a VSI partition, usually VSI partition number 1. VSI VPI 1 is reserved for AutoRoute PVCs. (This restriction applies only to trunks, not to ports. For a port, you can use any VPI value.) For a port UNI, the VPI range is 1 to 255. For a port NNI, the range is 1 to 4095. For trunks that do not have AutoRoute configured, the VPI ranges are the same as for ports.</p> <p>The VSI partition for tag switching should start at VPI 2. If VPI 2 is not to be used, you can use the tag switching VPI interface configuration on the TSC to override the defaults.</p> <p>For trunks with AutoRoute configured, the range is 2 to 4095. Always set to 2 for trunks.</p>
End VSI VPI	<p>Two VPIs are sufficient for Release 9.1, although it may be advisable to reserve a larger range of VPIs for later expansion, for example, VPIs 2-15.</p> <p>The range is the <i><Start VSI VPI></i> value to 4095.</p>

Parameter	Description
Minimum VSI Bandwidth	The minimum port bandwidth that can be used by this partition in cells/second. The range is 0 to <Maximum Line Rate>. For example, the OC3 line rate is 352207. 0 is the default.
Maximum VSI Bandwidth	The maximum port bandwidth that can be used by this partition. This value is used for VSI Qbin bandwidth scaling. The range is 0 to <Maximum Line Rate>. For example, the OC3 line rate is 352207. 0 is the default.

cnftrk

Configures trunk parameters. A trunk has a default configuration after you activate (or “up”) the trunk with the **uptrk** command. Beyond this default configuration, **cnftrk** lets you configure trunk parameters. Typically, you use **uptrk** to first up the trunk, then use **cnftrk** to configure trunk parameters, then use **addtrk** to add it to the network. You must execute **cnftrk** at both ends of a trunk.

The section “cnftrk–Parameters” in this description shows required **cnftrk** parameters. The section titled “cnftrk–Optional Parameters” shows virtual trunk parameters. You can reconfigure some parameters after adding a trunk with **addtrk**. See the section “Reconfiguring a Trunk.”

In the display for **cnftrk**, the current value for each parameter appears on screen. At the command line prompt for each parameter, the current or default value appears in parentheses and stays the same if you press Return without typing any characters. Configurable parameters depend on the trunk type. For example, an NTM and BNI support different parameters. If a displayed parameter is not available for the current interface, its name appears at half-intensity, and the value field contains dashes. (Note that Clock Rate is a required parameter for only HSSI. The Clock Rate range is 4 Mbps–50.84 Mbps. The actual clock limits depend on the front card.)

Note If you specify **cnftrk** in a job, prompts appear for line format and line options when you create or edit the job with **addjob** or **editjob**, respectively.

In Release 9.1, you can configure cost-based routing from either end of the trunk. You can change the cost before or after the trunk has been added to the network. You can also change the cost after connections have been routed over the trunk. Any cost change is updated network-wide. Every node in the network stores the cost of every trunk in the network.

Subrate and Fractional Trunks

For FastPacket trunks, which the NTC and NTM front cards support, the Subrate interface and Subrate data rate fields are configurable only if the back card is a BC–SR. The interface types for a subrate trunk are V.11, X.21, V.35, and EIA/TIA-449. Set the data rate to match the subrate facility within the range 64 Kbps–1.920 Mbps.

The DS-0 map is used to define fractional E1 and T1 trunks. It consists of a repeating set of specifications in the form <x[-y[a]]>, where “x” and the optional “y” are DS-0 numbers 0–23, and the optional “a” indicates *alternating*. The value of “y” must be greater than the value of “x.” The values of both “x” and “y” cannot be less than 0 or greater than the maximum number of DS-0s for the line type. In the DS-0 map for unframed E1, use 0–31. For framed E1, use 1–31. For 30 DS-0 E1, use 1–15, 17–31.

Receive and Transmit Rates on Physical Trunks

The parameters RCV Trunk Rate and Transmit Trunk Rate apply to physical ATM trunks on an IPX or IGX node. On a BPX node, only Transmit Trunk Rate is available. These parameters let you configure lower rates than the maximum line rate for the trunk type. If you adjust a rate, you need to do this at both ends of the trunk. For example, if RCV Trunk Rate on an IGX is 40,000 packets per second (pps), Transmit Trunk Rate on the far end must be 20,000 cells per second (cps). The typical relationship between pps and cps is two FastPackets for each cell.

For ATM trunks terminating on an AIT (IPX) or a BTM (IGX), make sure the receive rate is below the maximum of the T3 or E3 line rate. For these cards, the rate should be no more than 40,000 packets per second. (On an IPX node, the reason for reducing the rate is to prevent the MUXBUS from becoming overloaded. Furthermore, the rate should be even less if large numbers of T1 or E1 trunks exist on the same IPX node.) Increments for RCV Trunk Rate and Transmit Trunk Rate can be as small as 1 cell or packet per second. (Note that the node may round up or round down the value you enter.)

The default value for Transmit Trunk Rate is the maximum rate for the back card type. You can reduce this rate to any number of cells per second that is less than or equal to the physical port rate. If E3 or T2 is selected, the bandwidth is reduced from the T3 rate.

Receive and Transmit Rates on Virtual Trunks

The implementation of XMT Trunk Rate on a virtual trunk differs from the implementation on a physical trunk. On a physical trunk, XMT Trunk Rate limits the rate at which the back card physically generates cells. For a virtual trunk, XMT Trunk Rate does not limit the rate at which the back card generates cells: the line rate stays at the maximum for the line type. However, XMT Trunk Rate is the maximum transmission rate allowed on a virtual trunk.

The provider of the virtual trunk service assigns the value for XMT Trunk Rate. You must have this provider-assigned value for XMT Trunk Rate and enter it when you use **cnftrk**.

The total bandwidth of all the virtual trunks in one port cannot exceed the maximum bandwidth of the port. The trunk loading (load units) is maintained per virtual trunk., but the cumulative loading of all virtual trunks on a port is restricted by the transmit and receive rates for the port.

Virtual Trunk Traffic Classes

All types of Cisco traffic are supported through an ATM cloud. Every trunk is defaulted to carry every type of traffic. The CBR, VBR, and ABR virtual trunks within the cloud should be configured to carry the correct type of traffic. The CBR trunk is suited to carry all types of traffic. The VBR trunk is best suited to carry IPX frame relay and BPX VBR traffic, as well as ForeSight and ABR traffic. The ABR trunk is best suited to carry ForeSight and ABR traffic. You can change the type of traffic each trunk carries. However, to avoid unpredictable results, it is best to stick to the recommended traffic types for a given VPC type.

Adding a Single Virtual Trunk

Following example describes a typical scenario of adding one virtual trunk across an ATM network. One side of the cloud is a BPX with a BXM trunk in slot 4. On the other side of the cloud is an IGX with a UXM trunk card in slot 10. A virtual trunk is added between port 3 on the BXM and port 2 of the UXM.

Note You must configure a VPC within the cloud first.

- 1 On BPX_A, up virtual trunk #1 on BXM trunk port 4.3.1.
uptrk 4.3.1
- 2 On BPX_A, configure the VPI, VPC type, traffic classes, number of connection channels, and header type.

cnftrk 4.3.1

- 3 On IGX_A, up the virtual trunk #1 on the UXM trunk port 10.

uptrk 10.2.1

- 4 On IGX_A, configure the VPI, VPC type, traffic classes, number of connection channels, and header type.

cnftrk 10.2.1

- 5 On BPX_A, add a virtual trunk between the two nodes. (Executing addtrk 10.2.1 at IGX_A would also add a virtual trunk between the two nodes.)

addtrk 4.3.1

The VPI values you chose during **cnftrk** must match those used by the cloud VPC. Also, both ends of the virtual trunk must match on Transmit Rate, VPC type, traffic classes supported, and number of connection channels supported. The **addtrk** command checks for matching values before allowing the trunk to be added to the network topology.

The network topology from BPX_A's perspective after you add the trunk be:

```
BPX_A 4.3.1-10.2.1/IGX_A
```

Full Name

Configure trunk

Syntax

```
cnftrk <slot.port>[.vtrk] <options for E1 | T1 | E3 | T3 | OC3 | OC12 | E2 | HSSI | SR >
```

Related Commands

addtrk, dsptrkcnf

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
cnftrk 11
```

Description

Configure trunk 11. The trunk in slot 11 is an ATM T3 trunk on an ALM/B. (If you want to verify the card is the trunk version of the ALM, use either **dspcd** or **dspcds** and check the front card "Rev." The Rev column contains a B for the first character for an ALM/B.)

System Response

```
IGX16          TN      SuperUser      IGX 16      9.1 Sep. 5 1997 16:38 PST

PLN 11 Config      T3/576 [192000pps]  ALM slot: 11
Clock Rate:        --                               Idle code:          7F hex
Transmit Trunk Rate: 96000 cps                               Restrict PCC traffic: No
Rcv Trunk Rate:    192000 pps                               Link type:          Terrestrial
Subrate interface: --                               Line framing:      --
Subrate data rate: --                               coding:            --
Line DS-0 map:     --                               CRC:              --
Pass sync:         Yes                               recv impedance:   --
Loop clock:        No                               cable type:
Statistical Reserve: 992 pps                               length:           0-225 ft.
Header Type:       STI                               HCS Masking:      Yes
Gateway Type:     BAM                               Payload Scramble:  No
VPI Address:      0                               End supp BData:   Yes
VCI Address:      0                               End supp FST:     Yes
Deroute delay time: 0 seconds
```

```
Last Command: cnftrk 11
```

```
Next Command:
```

Example 2

cnftrk 1.1

Description

Configure trunk 1.1. This trunk is an ATM T3 trunk on a BPX node.

System Response

```

batman          TN      SuperUser      BPX 15      9.1      Date/Time Not Set

TRK 1.1 Config      T3      [96000 cps]  BNI-T3 slot: 1
Restrict CC traffic: No
Transmit Rate:      96000      Link type:      Terrestrial
Subrate interface:  --      Line framing:   --
Subrate data rate:  --      coding:         --
Line DS-0 map:      --      CRC:            --
Pass sync:          Yes      rcv impedance:  --
Loop clock:         No      cable type:     --
Statistical Reserve: 992 cps      length:         0-225 ft.
Idle code:          7F hex      HCS Masking:    Yes
Connection Channels: 1771      Payload Scramble: No
Valid Traffic Classes:
      V,TS,NTS,FR,FST,CBR,VBR,ABR      Cell Header Type: --
Virtual Trunk Type: --
SVC Channels:       0      Virtual Trunk VPI: --
SVC Bandwidth:     0 cps      Virtual Trunk Service: --

This Command: cnftrk 1.1

```

```

Transmit Rate [T2=14490, E3=80000, T3=96000, OC3 = 353208](96000):

```

Example 3

cnftrk 13.1.1

Description

Configure trunk 13.1.1 (a virtual trunk on an ATM T3).

System Response

```

sw97           TN      SuperUser      BPX 15      9.1      July 30 1997 11:45 GMT

TRK 13.1.1 Config  T3      [2867 cps]  BNI-T3 slot: 13
Restrict CC traffic: No
Transmit Rate:      3000      Link type:      Terrestrial
Subrate interface:  --      Line framing:   --
Subrate data rate:  --      coding:         --
Line DS-0 map:      --      CRC:            --
Pass sync:          No      rcv impedance:  --
Loop clock:         No      cable type:     --
Statistical Reserve: 992 cps      length:         0-225 ft.
Idle code:          7F hex      HCS Masking:    Yes
Connection Channels: 55      Payload Scramble: No
Valid Traffic Classes:
      Frame Scramble: --

```

```
V,TS,NTS,FR,FST,CBR,VBR,ABR      Virtual Trunk Type:   CBR
                                   Virtual Trunk VPI:       0
                                   Virtual Trunk Service:    4
```

```
Last Command: cnftrk 13.1.1 3000 N N 992 7F 55 V,TS,NTS,FR,FST,CBR,VBR,ABR N TER
RESTRIAL 0 Y N CBR 0
```

Next Command:

Example 4

cnftrk 6.3

Description

Configure trunk 6.3 (an OC3 trunk on a UXM).

System Response

```
sw228          TN      SuperUser      IGX 16      9.1.w2      Aug. 27 1997 17:42 PST

TRK 6.3 Config      OC3      [353056cps] UXM slot: 6
Transmit Trunk Rate: 353207 cps      Frame Scramble:      Yes
Rcv Trunk Rate:     353207 cps      Cell Framing:       STS-3C
Pass sync:          Yes
Loop clock:         No
Statistical Reserve: 1000 cps
Idle code:          7F hex
Restrict PCC traffic: No
Link type:          Terrestrial
Routing cost:       10
HCS Masking:        Yes
Payload Scramble:   Yes
Connection Channels: 256
Gateway Channels:   256
Valid Traffic Classes:
                   V,TS,NTS,FR,FST,CBR,VBR,ABR
```

Last Command: cnftrk 6.3

Next Command:

Example 5

cnftrk 8.1

Description

Configure trunk 8.1 (a T3 trunk on a UXM).

System Response

```
sw228          TN      SuperUser      IGX 16      9.1.w2      Aug. 27 1997 17:42 PST
```

```
TRK 8.1 Config      T3      [96000cps] UXM slot: 8
Transmit Trunk Rate: 96000 cps
Rcv Trunk Rate:     96000 cps      Line Framing:     PLCP
Pass sync:          Yes           Cable Length      0-255 ft.
Loop clock:         No
Statistical Reserve: 1000 cps
Idle code:          7F hex
Restrict PCC traffic: No
Link type:          Terrestrial
Routing cost:       10
HCS Masking:        Yes
Payload Scramble:   Yes
Connection Channels: 256
Gateway Channels:   256
Valid Traffic Classes:
                    V,TS,NTS,FR,FST,CBR,VBR,ABR
```

```
Last Command: cnftrk 8.1
```

```
Next Command:
```

Example 6

cnftrk 10.1

Description

Configure trunk 10.1 (an E3 trunk on a UXM).

System Response

```
sw228          TN      SuperUser      IGX 16      9.1.w2      Aug. 27 1997 17:42 PST

TRK 10.1 Config      E3      [80000cps] UXM slot: 10
Transmit Trunk Rate: 80000 cps
Rcv Trunk Rate:      80000 cps      Line Framing:      HEC
Pass sync:           Yes      Cable Length      0-255 ft.
Loop clock:          No
Statistical Reserve: 1000 cps
Idle code:            7F hex
Restrict PCC traffic: No
Link type:            Terrestrial
Routing cost:         10
HCS Masking:          Yes
Payload Scramble:     Yes
Connection Channels: 256
Gateway Channels:     256
Valid Traffic Classes:
      V,TS,NTS,FR,FST,CBR,VBR,ABR

Last Command: cnftrk 10.1

Next Command:
```

Example 7

cnftrk 5.2

Description

Configure trunk 5.2 (an E1 trunk on a UXM).

System Response

```

sw224          TN      SuperUser      IGX 16      9.1.n2      Aug. 27 1997 17:50 GMT

TRK 5.2-8 Config      E1/203 [30641 cps]  UXM slot: 5
Line DS-0 map:        1-15,17-31          Valid Traffic Classes:
Transmit Trunk Rate:  30641 cps           V,TS,NTS,FR,FST,CBR,VBR,ABR
Rcv Trunk Rate:       28075 cps           Retained links:      7
Pass sync:            Yes              IMA link auto disable:Disable
Loop clock:           No
Statistical Reserve:  600 cps
Idle code:            54 hex
Restrict PCC traffic: No
Link type:             Terrestrial
Routing cost:         10
Line coding:           HDB3
HCS Masking:          Yes
Payload Scramble:     Yes
Connection Channels:  256
Gateway Channels:     256

This Command: cnftrk 5.2

```

Example 8

cnftrk 10.1

Description

Configure trunk 10.1 (a T1 trunk on a UXM).

System Response

```

sb-reef        TN      SuperUser      IGX 16      9.1.12      Aug. 27 1997 17:46 PDT

TRK 10.1-5 Config    T1/115 [17358 cps]  UXM slot: 10
Transmit Trunk Rate:  17358 cps           Connection Channels:  256
Rcv Trunk Rate:       17358 cps           Gateway Channels:     256
Pass sync:            Yes              Valid Traffic Classes:
Loop clock:           No                V,TS,NTS,FR,FST,CBR,VBR,ABR
Statistical Reserve:  600 cps           Retained links:      5
Idle code:            7F hex           IMA link auto disable:Enable
Restrict PCC traffic: No              Window size:         30 (x10 secs)
Link type:             Terrestrial          Max transition cnts:10
Line framing:          ESF                Link reenable time:  6 (x10 mins)
Line coding:           B8ZS
Line cable type:      ABAM
Line cable length:    0-131 ft.
HCS Masking:          Yes
Payload Scramble:     No

Last Command: cnftrk 10.1

```

Table 4-7 cnftrk-Parameters

Trunk Option	Type	Description	Possible Entries	Default
slot.port	All	The number of the trunk to configure.	Any valid slot and port. For cards with one port, use slot.	N/A
Trunk Identification (display only—not configurable)	All	Displays trunk number, trunk type and bandwidth supplied; and the card type and slot number of the unit supporting the trunk.	T3, E3, T1, E1, E2, fractional T1, fractional E1 subrate, ATM, NTC, NTM, OC3, STM1, OC12, STM4.	none
Clock Rate	ATM	This clock rate is for only HSSI.	4 Mbps–50.84Mbps	
Rcv TRK Rate	ATM	CELLBUS or MUXBUS bandwidth in packets per second (pps) to allocate to a BTM, ALM/B, or AIT. On a BPX, Rcv TRK Rate is not used.	ALM/B T3: 1K–192K pps BTM (IGX) or AIT (IPX): 0–80K pps BTM-E1: 0–10538 pps for CGW, unframed E1 or 0–10208 pps for CGW, for framed E1	1000 pps
Subrate interface	PKT	Subrate physical interface type	X.21 V.35	X.21
Subrate data rate	PKT	Subrate data rate in Kbps. Allows you to specify, in Kpbs, the clock rate for the selected subrate interface. Acceptable values are any multiple of 64 Kpbs up to a maximum of 1920 Kbps.	64 Kbps, 128 Kbps, 256 Kbps, 384 Kbps, 1.024Mbps, 1.536 Mbps, and 1.920Mbps	1920 Kbps
DS0 map	PKT	Specifies the DS0s to use for a fractional T1 or E1 bundle. Optional “a” = “use alternating channels” (for example, 20–30a means 20, 22, 24, and so on.)	x - y[a]	0-31 (E1) 0-23 (T1)
Pass sync	All	Enables the trunk to pass a clock for network synchronization.	Yes No	Yes for standard, no for virtual trunks
Loop Clock	All	Loop receive clock back to transmit.	Yes No	No
Statistical Reserve	All	This trunk bandwidth is reserved for non-standard traffic, such as internode controller messages or user traffic diverted because of a failure.	0–10666	600 for FastPackets 1000 for ATM cells (992 cells on BNI)
Header Type	ATM	Selects the ATM cell header type: UNI, NNI, or STI. UNI is the default for virtual trunks but you may need to configure this parameter to NNI to match the header type of the VPC provided by the ATM cloud. See the <i>Cisco WAN Switching System Overview</i> for a description.	UNI NNI STI .	STI
Gateway Type	ATM	Defines the type of addressing mode for this trunk. See <i>Cisco WAN Switching System Overview</i> for a description.	BPX-BPX (BAM) Cloud (CAM) Simple (SAM)	BAM
VPI Address	ATM	Virtual path address in ATM cell. The VPI configured for a virtual trunk must match the VPI for the VPC in the cloud. Valid VPC VPIs depend on the port type. Must be non-0 for a virtual trunk.	BXM/UXM (UNI)—1-255 BXM/UXM (NNI)—1-4095 BNI T3/E3—1-255 BNI OC3 —1-63	0
VCI Address	ATM	Virtual circuit address in ATM cell.	0–65,535	0

Trunk Option	Type	Description	Possible Entries	Default
Idle code	All	HEX code either in the payload space of an ATM <i>idle cell</i> or on an <i>idle FastPacket trunk</i> (idle packets do not exist)	0–FF (hex)	54 (E1) 7F (T1, ATM)
SVC Channels	ATM	The number of channels reserved for SVCs.	T3: 0–1771 E3: 0–1771 OC3: 0–16199	0
SVC Bandwidth	ATM	The bandwidth reserved for SVCs.	T3: 96000 cps E3: 80000 cps OC3: 353208 cps	0
Restrict CC traffic (requires super user privilege)	All	Restrict node controller messages from a trunk. Restricting CC traffic can cause serious problems. Contact the TAC through Cisco Customer Engineering before you change it.	Y N	No
Link type	All	Terrestrial or Satellite link.Link Type applies to configuring a route so it can “avoid satellite.”	T S	T
Routing Cost	ATM	The administrative cost of a trunk for when cost-based routing is configured.	1–50	10 (upon trunk activation)
Line framing	PKT	T1 line framing	D4 ESF	D4
Line coding	PKT	E1 line coding T1 line coding	HDB3 AMI ZCS B8ZS AMI	HDB3 ZCS
Line CRC	PKT	E1 CRC-4	Yes No	No
Recv impedance	PKT	E1 receive impedance	1 = 75W unbalanced 2 = 75W balanced 3 = 120W balanced	1
Cable type and cable length	PKT ATM	Length and type of cable used for trunk. Designates the software configurable line build-out to match the cable length from the IPX or IGX node to the DSX cross-connect. For BPX, the choices are 0–225 feet and over 225 feet. Cable type is not selectable for BPX. Not applicable to MMF or SMF	1 = 0–220' MAT 2 = 220–440' MAT 3 = 440–655' MAT 4 = 0 -133' ABAM 5 = 133–266' ABAM 6 = 266–399' ABAM 7 = 399–533' ABAM 8 = 533–655' ABAM 0= 0–225 1= greater than 255	4 0
HCS Masking	ATM	Mask the ATM cell header checksum to disable error checking. HCS Masking applies to E3, OC3, and OC12 only.	Yes No	Yes
Payload Scramble	ATM BNI	Scramble the cell payload.	Yes No	Yes for BNI-E3 No for all others
End supp BData	PKT ATM	Indicates whether the far end of a trunk supports bursty, Frame Relay data.	Yes No	No
End supp FST	PKT ATM	Indicates whether the far end of the trunk supports ForeSight for Frame Relay.	Yes No	No

Trunk Option	Type	Description	Possible Entries	Default
Gateway Efficiency	ATM	How many packets to stuff into an ATM cell. Does not apply to BNI.	1 2 3	2
Deroute Delay Time	All	Indicates how long in seconds the network will wait before rerouting connections on a failed trunk. This helps when statistical errors are occurring or when a trunk momentarily moves into a failure state then returns to normal operation. This feature is relevant when rerouting the connections is more of a disruption than the errors caused by the intermittent trunk.	0-600	0

Table 4-8 cnftrk—Optional Parameters

Virtual Trunk Parameter	Type	Description	Possible Entries	Default
Connection Channels	BNI	The maximum number of connection channels per trunk. All virtual trunks on the port share this total. The number of connections added to the port cannot exceed the number of connection channels configured for the port.	BNI-T3/E3: max 1771 BNI-OC3: max 15867	BNI-T3/E3: 1771 BNI-OC3: 15867 For Virtual Trunks: BNI-T3/E3: 55 BNI-OC3: 1442
Valid Traffic Classes	BNI, BXM	The valid types of traffic for a virtual trunk. The recommended traffic classes for each virtual trunk type: On a CBR trunk: ATM CBR, NTS, TS, voice. On a VBR trunk: ATM VBR and bursty data A. On an ABR trunk: ATM ABR and bursty data B (ForeSight).	V—voice TS—timestamped NTS—non-timestamped FR—Frame Relay FST—ForeSight CBR—constant bit rate VBR—variable bit rate ABR—available bit rate	
Virtual Trunk Type	BNI	This choice usually comes from the carrier that provides the ATM cloud.	CBR, VBR, ABR	CBR
Virtual Trunk VPI	BNI	Virtual Trunks must be configured to have a greater-than-0 VPI before connections are added by addcon . This value usually comes from the carrier that provides the ATM cloud.	1–255 for T3/E3 1–63 for OC3 (STM1)	

cnftrkalm

Configures alarm reporting for a trunk. When a trunk is upped and added to the network, alarm reporting is enabled, but **cnftrkalm** lets you disable alarms on upped trunks. Disabling alarms can be useful when a trunk is connected to a node but not yet in service or when a trunk has occasional bursts of errors but still functions.

In an IPX or IGX node, enabled alarms cause an output from the ARC or ARM card or an indication to StrataView Plus.

Full Name

Configure trunk alarms

Syntax

```
cnftrkalm <slot.port>[.vtrk] <e | d>
```

Related Commands

dspalms, dsptrks

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
cnftrkalm 7 d
```

Description

Disable trunk alarms on trunk 7.

System Response

```

beta          TRM   YourID:1          IPX 32    9.1    Aug. 3 1997 15:21 MST

PLN  Type      Current Line Alarm Status      Other End
 7   E1/32     Clear - Line OK                 alpha.10
 9   T1/24     Clear - Line OK                 gamma.10
13   T1/24     Clear - Line OK                 alpha.14
15   T1/24     Clear - Line OK                 gamma.15
20   T3/3      Major - AIT Missing             -
    
```

Last Command: cnftrkalm 7 d

Next Command:

Table 4-9 cnftrkalm-Parameters

Parameter	Description
slot.port	Specifies the trunk number.
e	Enables the alarm.
d	Disables the alarm.

Table 4-10 cnftrkalm-Optional Parameters

Parameter	Description
vtrk	Specifies the virtual trunk number.

cnftrkict

Configures the output lines of an interface control template for a substrate trunk. Table 4-11 shows the configurable signals:

Table 4-11 Configurable Signals in an Interface Control Template

Interface Type	Output Signal	Inputs
X.21	C, I	
V.35	RTS, DTR	CTS, DSR
MIL-188	IS, LL, RL, RS, SF, SS, TR	DM, CS

Full Name

Configure trunk interface control template

Syntax

cnftrkict <line> <output> <source>

Related Commands

dsprkict, **prtrkict**

Attributes

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

Example 1

```
cnftrkict 9 c on
```

Description

Configure output lead “c” as “on” in the interface control template for substrate trunk 9.

System Response

```
beta          TRM  YourID:1          IPX 32    9.1    Aug. 3 1997 15:15 MST
```

```
Packet Line:      9
Interface:        X.21  DTE
```

Interface Control Template for Trunk Line

```
Lead  Output Value      Lead0 Output Value
      C /DTR ON
```

Last Command: cnftrkict 9 c on

Next Command:

Table 4-12 cnftrkict-Parameters

Parameter	Description
line	Specifies the trunk for the interface control template.
output	Specifies the output lead to be configured. Configurable output leads vary depending on the type of data interface used (X.21 or V.35).
source	Specifies how the specified output lead is to be configured. The options are as follows: <ul style="list-style-type: none"> • On, which means the output lead is asserted. • Off, which means the output lead is inhibited. • l (lower case L) Output follows a local input lead. • Input, which specifies the name of the local input lead that the output lead follows. Input leads vary according to the type of data interface supported (X.21 or V.35).

cpytrkict

Copies the interface control template of one trunk to another trunk. Once copied, the control information can be edited with the **cnftrkict** command. See the **cnftrkict** description for more information on configuring the trunk interface control templates.

Full Name

Copy trunk interface control template

Syntax

cpytrkict <source_trunk> <destination_trunk>

Related Commands

cnftrkict, **dsptrkict**

Attributes

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

Example 1

cpytrkict 9 11

Description

Copy the interface control template for trunk 9 to trunk 11.

System Response

```
beta          TRM   YourID:1          IPX 32    9.1    Aug. 3 1997 15:15 MST
```

```
Packet Line:      9
Interface:        X.21    DTE
```

```
Interface Control Template for Trunk Line
```

```
Lead  Output Value  Lead  Output Value
C/DTR  ON
```

```
Last Command: cpytrkict 9 11
```

```
Enter destination line number:
```

Table 4-13 cpytrkict-Parameters

Parameter	Description
source trunk	Specifies the trunk number of the interface control template information to be copied.
destination trunk	Specifies the trunk number to which the interface control template information is copied.

deltrk

Deletes a trunk. Because deleting a trunk removes the communication path between two nodes, using **deltrk** may split a network into two separate networks. If **deltrk** execution splits the network, deletion of the connections that were using the deleted trunk also occurs.

If both nodes on the trunk are reachable, executing **deltrk** is necessary on only one node. If a trunk is deleted on a node while the node at the other end is unreachable, the unreachable node does not detect the deletion, so be sure to delete the trunk at both nodes in this case.

After you delete a trunk, it still carries framing signals but no traffic. Also, the trunk can generate alarms for counting. To remove a trunk completely, use **dntrk** after the **deltrk** command.

In the following situations, the node does not allow **deltrk** to execute:

- Another node is attempting to change the network topology by adding or deleting a trunk.
- Another node is notifying all other nodes that it has a new node name.
- Another node is adding or deleting a channel connection in the network with the **addcon** or **delcon** command.

Full Name

Delete trunk from a network

Syntax

```
deltrk <slot.port>[.vtrk]
```

Related Commands

addtrk, dntrk, dspnw, dsptrks, uptrk

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
deltrk 7
```

Description

Delete trunk 7 from the network.

System Response

```
beta          TRM   YourID:1      IPX 32      9.1      Aug. 15 1997 15:02 MST

PLN  Type      Current Line Alarm Status      Other End
 7   E1/32     Clear - Line OK                -
 9   T1/24     Clear - Line OK                gamma.10
13   T1/24     Clear - Line OK                alpha.14
15   T1/24     Clear - Line OK                gamma.15
20   T3/3      AIT - AIT Missing              -
```

Last Command: deltrk 7

Next Command:

Table 4-14 deltrk-Parameters

Parameter	Description
slot.port	Specifies the physical trunk number.

Table 4-15 deltrk-Optional Parameters

Parameter	Description
vtrk	Specifies the virtual trunk portion of the trunk identifier.

deltrkred

Removes redundancy from a UXM, ALM/B, BTM, or AIT trunk. After you execute **deltrkred**, you can remove the backup card without causing an alarm.

Full Name

Delete ATM trunk redundancy

Syntax

deltrkred <backup ATM trunk number>

Related Commands

addtrkred, **dsptrkred**

Attributes

Privilege	1–4
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
deltrkred 5
```

Description

Remove ATM trunk redundancy for the card set in slot 5.

System Response

```
beta          TRM  YourID:1      IPX 32    9.1    Aug. 15 1997 15:15 MST
ATM Line      Backup ATM Line
5              8
```

Last Command: deltrkred 5

Next Command:

Table 4-16 deltrkred-Parameters

Parameter	Description
Backup trunk number	Specifies of the ATM card set assigned as the backup.

dntrk

Downs a trunk, after which it no longer carries framing or statistics. Before you can down a trunk with **dntrk**, you must remove it from the network with **deltrk** (or **delshef** in a tiered network).

Full Name

Down trunk

Syntax

dntrk <slot.port>[.vtrk]

Note No space exists between the port number and the “.” for the virtual trunk specification.

Related Commands

addtrk, deltrk, uptrk, dsptrks

Attributes

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

Example 1

```
dntrk 9
```

Description

Deactivate trunk 9.

System Response

```
beta          TRM   YourID:1      IPX 32      9.1      Aug. 3 1997 10:53 MST

From Type     Current Line Alarm Status      Other End
13  T1/24      Clear - Line OK                alpha.14
15  T1/24      Clear - Line OK                gamma.15
20  T3/3       Major - AIT Missing            -
```

Last Command: dntrk 9

Next Command:

Table 4-17 dntrk-Parameters

Parameter	Description
slot.port	Specifies the physical trunk.

Table 4-18 dntrk-Optional Parameters

Parameter	Description
vtrk	Specifies a virtual trunk number (applies to BNI only). T3/E3 range is 1-32. OC3 range is 1-11.

dspnw

Displays the network topology in tabular form. Alarms appear in a column, and added trunks (by **addtrk**) appear to the right to the node name. Each trunk entry shows the local back card slot number and the node name and back card slot number on the other end of the line. Note the following conventions:

- ~ indicates that the trunk is a satellite line.
- Flashing entry indicates a failed line.
- Blinking node name indicates a node executing downloader software.

If the network has more nodes and trunk connections than are currently on the screen, a “Continue?” prompt appears. Press the Return key to display other parameters, or enter “n” to exit the command.

Full Name

Display network

Syntax

dspnw [+b | -b] [+z | -z]

Related Commands

dspnds, **prtntw**

Attributes

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

Example 1

```
dspnw
```

Description

Display the network topology in tabular form.

System Response

```

sw91          TN      SuperUser      IPX 8      9.1 Nov. 13 1997 16:06 GMT

NodeName      Alarm      Packet Line
sw92          UNRCH
  8-7/sw91
sw200         UNRCH
  14-14/sw201      15-15/sw201      16-16/sw201
sw201         UNRCH
  14-14/sw200      15-15/sw200      16-16/sw200
  12.1-4.5/sw26
sw12          MAJOR
  3.1.2-4.7/sw26   3.1.3-6.3/sw91
sw91          MAJOR
  7-8/sw92         6.3-3.1.3/sw12   6.4-3.1.4/sw68
sw68          Minor
  3.1.4-6.4/sw91
  
```

This Command: dspnw

Continue?

The display shows a network containing the nodes alpha, beta, and gamma. The word “Major” on the right of “gamma” and “beta” (see Alarm column) indicates the existence of alarm conditions such as loss of signal.

The “10-9/beta” listed to the right of node gamma indicates that trunk 10 on node gamma connects to node beta as trunk 9. The “7-10/alpha” listed to the right of node beta indicates that trunk 7 on node beta connects to node alpha as trunk 10. If the two trunk numbers are separated by an tilde (~) in place of a dash (-), the display is indicating a satellite. The following illustrates a map of this network.

Table 4-19 dspnw–Optional I Parameters

Parameter	Description
+b	Display only the lines that support bursty data.
-b	Display only the lines that do not support bursty data.
+z	Display only the lines that use ZCS encoding.
-z	Display only the lines that do not use ZCS encoding.

dsppphyslns

Displays a summary of line alarm status for the ATM port specified. These include the cell count in the transmit and receive directions, and error counts associated with the port. The display indicates the date and time that the statistics were cleared and the statistics collection time since the last clearance. Cells transmitted indicates the amount of data transmitted out the port to the user device. Cells received indicates the amount of data received from the user device at the port. Corrupted statistics result from channel/port loopbacks or port tests. A yes in this field indicates that such loopback or port test have occurred since the statistics were last cleared.

Full Name

Display the status of the UXM trunk and its physical line (or lines if IMA).

Syntax

dsppphyslns [slot]

Related Commands

dsppphyslnstathist

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	IGX
Lock	No

Example 1

dsppphyslns

Description

Display the physical line of all the UXM cards on the node.

System Response

```

sw228          TN   SuperUser      IGX 16   9.1      Aug. 27 1997 17:52 PST

PHYSLN  Type  Current Line Alarm Status          TRK
  6.2    OC3   Major - Loss of Sig (RED)          6.2
  6.3    OC3   Clear - OK                          6.3
 11.3    E1/30 Clear - OK                          11.3
 11.4    E1/30 Major - Loss of Sig (RED) 11.4-6
 11.5    E1/30 Major - Loss of Sig (RED) 11.4-6
 11.6    E1/30 Major - Loss of Sig (RED) 11.4-6

```

Last Command: dspphyslns

Example 2

dspphyslns 11

Description

Display the physical lines of the UXM card in slot 11.

System Response

```
sw228          TN      SuperUser      IGX 16      9.1      Aug. 27 1997 17:53 PST

PHYSLN  Type  Current Line Alarm Status      TRK
11.3    E1/30  Clear - OK                        11.3
11.4    E1/30  Major - Loss of Sig (RED)        11.4-6
11.5    E1/30  Major - Loss of Sig (RED)        11.4-6
11.6    E1/30  Major - Loss of Sig (RED)        11.4-6
```

Last Command: dspphyslns 11

Table 4-20 dsphyslns-OptionalParameters

Parameter	Description
slot	Specifies the slot number.

dspphyslnstathist

Displays a summary of physical statistics for the specified individual line within an IMA trunk. These include the cell count in the transmit and receive directions, and error counts associated with the port. The display indicates the date and time that the statistics were cleared and the statistics collection time since the last clearance. Cells transmitted indicates the amount of data transmitted out the port to the user device. Cells received indicates the amount of data received from the user device at the port. Corrupted statistics result from channel/port loopbacks or port tests. A yes in this field indicates that such loopback or port test have occurred since the statistics were last cleared.

Full Name

Display individual physical line statistics

Syntax

dsphyslnstathist

Related Commands

dspphyslns, dspportstats

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	IGX (UXM)
Lock	No

Example 1

```
dspphyslnstathist 4.1
```

Description

Display the statistics for line on the IMA trunk on port 4.1.

System Response

```

ca19          VT   SuperUser      BPX 15    9.1    Aug. 23 1997 18:55 GMT

Port Statistics for 4.1          Cleared: Aug. 23 1997 18:19
Port Speed: 96000 cps    Collection Time: 0 day(s) 00:00:00    Corrupted: NO

          Cells          CLP          (EFCI)
Rx Port:   1274609      1032194          0
Tx Port:   1274607      1032192          0

                                CellBuf Of1:          0

Unknown Addr:          0
Last Unknown Addr:
Tx Payload Err Cnt:    0
Tx Hdr Err discard:    0
Nonzero GFC Count:    0
    
```

This Command: dspphysInstathist 4.1

Hit DEL key to quit:

Table 4-21 dspphysInstathist-Parameters

Parameter	Description
slot.port	Specifies the ATM card set and port number.

Table 4-22 dspphysInstathist-Optional Parameters

Parameter	Description
interval	Specifies the refresh interval time for data. It can be specified between 1 and 60 seconds. The default interval is 1 seconds.

dsptrkbob

Displays the state of all inputs from subrate line equipment to an IPX or IGX node and the state of all outputs from the node to the subrate line equipment. Display updates can occur at an optional, user-specified interval. Otherwise, the display remains on-screen until Delete is pressed or the display times out. The default interval for updating the display is every 5 seconds. If a trunk is disabled, its number appears in dim, reverse video. See **cnftrkict** for configuration details.

Full Name

Display trunk breakout box

Syntax

dsptrkbob <line> [interval]

Related Commands

cnftrkict, **dsptkict**

Attributes

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

Example 1

```
dspttrkbob 9
```

Description

Display the breakout for subrate trunk 9.

System Response

beta TRM YourID:1 IPX 32 9.1 Sep. 15 1997 15:15 MST

Packet Line:9

Interfaces: X.21 DTE

Inputs from Line Equipment

Lead	Pin	State	Lead	Pin	State	Lead	Pin	State	Lead	Pin	State
RxD	4/11	Idle	TxD	2/9	Active						
I/DSR	5/12	On				C/DTR	3/10	On			
S/RxC	6/13	Active									

Outputs to Line Equipment

Last Command: dsptrkbob 9

Hit DEL key to quit:

Table 4-23 dsptrkbob-Parameters

Parameter	Description
trunk	Specifies the substrate trunk.

Table 4-24 dsptrkbob-Optional Parameters

Parameter	Description
interval	The number of seconds between updates of the breakout box display. The range is 1-60.

dsptrkcnf

Displays trunk configuration. The parameter values that **dsptrkcnf** displays have been set with **cnftrk** or are default values.

As of Release 9.1, **dsptrkcnf** displays the cost of a trunk if cost-based routing is configured. You configure the administrative cost of a trunk with **cnftrk**.

Full Name

Display trunk configuration

Syntax

dsptrkcnf <slot.port>[.vtrk]

Related Commands

cnftrk

Attributes

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

Example 1

```
dsptrkcnf 6.8
```

Description

Display the configuration for trunk 6.8

System Response

```
sw203          TN      StrataCom      BPX 15      9.1      Sep. 25 1997 07:35 GMT

TRK 6.8 Config  OC3      [353207cps]  BXM slot:    6
Transmit Rate:  353208      Line framing: STS-3C
Subrate data rate:  --      coding:      --
Line DS-0 map:  --      CRC:        --
Statistical Reserve: 1000 cps      recv impedance: --
Idle code:      7F hex      cable type:  --
Max Channels/Port: 256      length:     --
Connection Channels: 256      Pass sync:  Yes
Traffic:  V,TS,NTS,FR,FST,CBR,VBR,ABR  Loop clock:  No
SVC Vpi Min:    0      HCS Masking: Yes
SVC Channels:   0      Payload Scramble: Yes
SVC Bandwidth:  0      cps      Frame Scramble: Yes
Restrict CC traffic: No      Virtual Trunk Type: --
Link type:      Terrestrial  Virtual Trunk VPI: --
Routing Cost:   10      Deroute delay time: 0 seconds

Last Command: dsptkcnf 6.8

Next Command:
```

Example 2

dsptkcnf 6

Description

Display the configuration for trunk 6. Trunk 6 is an AIT trunk on an IPX node.

System Response

```

sw91          TN      SuperUser      IPX 8      9.1      Sep. 22 1997 16:09 GMT

PLN 6 Configuration  T3/3      [1000 pps]  AIT slot: 6
Clock Rate:         --                Idle code:      7F hex
Transmit Trunk Rate: 96000 cps      Restrict PCC traffic: No
Rcv Trunk Rate:     1000 pps      Link type:      Terrestrial
Subrate interface:  --                Line framing:   --
Subrate data rate:  --                coding:        --
Line DS-0 map:      --                CRC:           --
Pass sync:          Yes            recv impedance: --
Loop clock:         No      pps      cable type:
Statistical Reserve: 992          length:        0-225 ft.
Header Type:        STI            HCS Masking:   Yes
Gateway Type:       BAM            Payload Scramble: No
VPI Address:        0              End supp BData: Yes
VCI Address:        0              End supp FST:  Yes
Routing Cost:       0

Last Command: dsptrkcnf 6

Next Command:

```

Example 3

```

dsptrkcnf 11

```

Description

Display the configuration for the E3 trunk in slot 11 (an ALM/B trunk).

System Response

```

IGX16          TN      SuperUser      IGX 16      9.1 Sep. 23 1997 02:08 GMT

PLN 11 Config      E3/480 [160000pps]  ALM slot: 11
Clock Rate:         --                Idle code:      7F hex
Transmit Trunk Rate: 80000 cps      Restrict PCC traffic: No
Rcv Trunk Rate:     160000 pps      Link type:      Terrestrial
Subrate interface:  --                Line framing:   --
Subrate data rate:  --                coding:        --
Line DS-0 map:      --                CRC:           --
Pass sync:          Yes            recv impedance: --
Loop clock:         No                cable type:
Statistical Reserve: 992      pps      length:        0-225 ft.
Header Type:        STI            HCS Masking:   Yes
Gateway Type:       BAM            Payload Scramble: No
VPI Address:        0              End supp BData: Yes
VCI Address:        0              End supp FST:  Yes
Routing Cost:       10

Last Command: dsptrkcnf 11

Next Command:

```

Example 4

dsptkcnf 13.3.1

Description

Display the configuration for virtual trunk 13.3.1. The trunk is on a BNI-T3 card set in a BPX node.

System Response

```
sw97          TN      SuperUser      BPX 15      9.1      June 22 1997 07:34 GMT

TRK 13.3.1 Config T3      [2867 cps] BNI-T3 slot: 13
Restrict CC traffic:      No
Transmit Rate:           3000      Link type:           Terrestrial
Subrate interface:      --      Line framing:      --
Subrate data rate:      --      coding:            --
Line DS-0 map:          --      CRC:               --
Pass sync:              No      recv impedance:    --
Loop clock:             No      cable type:
Statistical Reserve:    992 cps      length:            0-225 ft.
Idle code:              7F hex      HCS Masking:       Yes
Connection Channels:    55      Payload Scramble:   No
Valid Traffic Classes:  --      Frame Scramble:    --
                        V,TS,NTS,FR,FST,CBR,VBR,ABR Virtual Trunk Type: CBR
Virtual Trunk VPI:      1
Virtual Trunk Service:  3
```

Last Command: dsptkcnf 13.3.1

Next Command:

Example 5

`dsptkcnf 6.3`

Description

Display the configuration for trunk 6.3. The trunk is on a UXM-OC3 card set in an IGX node.

System Response

```
sw228          TN      SuperUser      IGX 16      9.1      Aug. 27 1997 17:42 PST

TRK 6.3 Config      OC3      [353056cps] UXM slot: 6
Transmit Trunk Rate: 353207 cps      Frame Scramble:      Yes
Rcv Trunk Rate:     353207 cps      Cell Framing:        STS-3C
Pass sync:          Yes
Loop clock:         No
Statistical Reserve: 1000 cps
Idle code:          7F hex
Restrict PCC traffic: No
Link type:          Terrestrial
HCS Masking:        Yes
Payload Scramble:   Yes
Connection Channels: 256
Gateway Channels:   256
Valid Traffic Classes:
    V,TS,NTS,FR,FST,CBR,VBR,ABR
Routing Cost:       10      Deroute delay time: 0 seconds

Last Command: dsptkcnf 6.3

Next Command:
```

Example 6

dsptrkcnf 5.2

Description

Display the configuration for trunk 5.2. The trunk is on a UXM-E1 card set in an IGX node.

System Response

```
sw224          TN      SuperUser      IGX 16      9.1      Aug. 27 1997 17:50 GMT

TRK 5.2-8 Config      E1/203 [30641 cps]  UXM slot: 5
Line DS-0 map:        1-15,17-31          Valid Traffic Classes:
Transmit Trunk Rate: 30641 cps           V,TS,NTS,FR,FST,CBR,VBR,ABR
Rcv Trunk Rate:      28075 cps           Retained links:      7
Pass sync:           Yes                IMA link auto disable:Disable
Loop clock:          No
Statistical Reserve: 600 cps
Idle code:           54 hex
Restrict PCC traffic: No
Link type:           Terrestrial
Line coding:         HDB3
HCS Masking:         Yes
Payload Scramble:    Yes
Connection Channels: 256
Gateway Channels:    256
Routing Cost:        10                Deroute delay time:  0 seconds

This Command: dsptrkcnf 5.2
```

Example 7

dsptkcnf 10.1

Description

Display the configuration for trunk 10.1. The trunk is on a UXM-T1 card set in an IGX node.

System Response

```

sb-reef          TN      SuperUser      IGX 16      9.1      Aug. 27 1997 17:46 PDT

TRK 10.1-5 Config      T1/115 [17358 cps] UXM slot: 10
Transmit Trunk Rate:   17358 cps      Connection Channels: 256
Rcv Trunk Rate:        17358 cps      Gateway Channels:    256
Pass sync:              Yes          Valid Traffic Classes:
Loop clock:             No           V,TS,NTS,FR,FST,CBR,VBR,ABR
Statistical Reserve:   600 cps      Retained links:      5
Idle code:              7F hex      IMA link auto disable:Enable
Restrict PCC traffic:  No           Window size:         30 (x10 secs)
Link type:              Terrestrial    Max transition cnts:10
Line framing:           ESF          Link reenable time: 6 (x10 mins)
Line coding:            B8ZS
Line cable type:        ABAM
Line cable length:     0-131 ft.
HCS Masking:           Yes
Payload Scramble:      No
Routing Cost:          10           Deroute delay time: 0 seconds

Last Command: dsptkcnf 10.1
    
```

Table 4-25 dsptkcnf-Parameters

Parameter	Description
slot.port	Specifies the physical slot and port number of the trunk.

Table 4-26 dsptkcnf-Optional Parameters

Parameter	Description
vtrk	Specifies the virtual trunk number. The maximum value on a node is 32. The maximum on a T3 or E3 line is 32. The maximum for user traffic on an OC3/STM1 trunk is 11. (See also the section called "Setting Up a Virtual Trunk" at the front of this chapter.)

dsprkict

Displays interface control information for the subrate trunks. The displayed information includes:

- Specified line.
- Associated leads and their status (i.e., on or off)
- Whether output follows a local input.
- Name of the local or remote input lead that the output lead follows.

To see a list of configurable outputs, and information on how to configure an output, see the **cnftrkict** command. Disabled trunks have their trunk number displayed in dim, reverse video on the screen.

Full Name

Display trunk interface control templates

Syntax

dsprkict <line>

Related Commands

cnftrkict, **prtrkict**

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1

```
dsprkict 9
```

Description

Display subrate for the trunk 9 interface control template.

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 15 1997 15:15 MST

Packet Line: 9

Interface: X.21 DTE

Interface Control Template for Trunk Line

Lead	Output Value	Lead	Output Value
C/DTR	ON		

Last Command: dsptkict 9

Next Command:

dsptkred

Displays the backup and primary cards for a trunk.

Full Name

Display ATM trunk redundancy

Syntax

dsptkred [trunk]

Related Commands

addtrkred, deltrkred

Attributes

Privilege	1-4
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	No

Example 1

```
dsptkred
```

Description

Display all ATM trunks with redundancy.

System Response

```
beta          TRM  YourID:1      IPX 32      9.1      Aug. 15 1997 15:15 MST
```

```
ATM Line           Backup ATM Line  
4                 5  
7                 8
```

Last Command: dsptkred

Next Command:

Table 4-27 dsptkred–Optional Parameters

Parameter	Description
ATM trunk number	Specifies the slot number of the primary or backup ATM card set to display. Without this optional entry, the screen displays all primary and backup ATM trunks.

dsptrks

Displays basic trunk information for all trunks on a node. This command applies to both physical only and virtual trunks. The displayed information consists of:

- Trunk number, including the virtual trunk number if applicable
- Line type (E1, T3, or OC3, for example)
- Alarm status

In addition, for trunks that have been added to the network with the **addtrk** command, the information includes the node name and trunk number at the other end. Trunks that have a “-” in the Other End column have been upped with **uptrk** but not yet added on both ends with **addtrk**. For disabled trunks, the trunk numbers appear in reverse video on the screen.

Full Name

Display trunks

Syntax

dsptrks

Related Commands

addtrk, deltrk, dntrk, dsprtk, uptrk

Attributes

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

Example 1

```
dsptrks
```

Description

Display information on the trunk configuration and alarm status for the trunks at a node. The trunk numbers with three places represent virtual trunks.

System Response

```
sw53          TN      SuperUser      BPX 15      9.1      Sep. 24 1997 23:03 GMT
```

TRK	Type	Current Line Alarm Status	Other End
1.1	T3	Clear - OK	sw89 (IPX/AF)
1.2	T3	Clear - OK	-
1.3	T3	Clear - OK	-
2.1.1	OC3	Clear - OK	-
3.1	T3	Clear - OK	sw92 (IPX/AF)
3.2	T3	Clear - OK	sw91 (IPX/AF)
3.3	T3	Clear - OK	sw90 (IPX/AF)
4.1	T3	Clear - OK	sw24 (IPX/AF)
4.2	T3	Clear - OK	swstorm/1.1
4.3	T3	Clear - OK	sw25 (IPX/AF)
13.1	T3(E3)	Clear - OK	-
13.2.1	T3	Clear - OK	-
13.2.2	T3	Clear - OK	-
13.2.3	T3	Clear - OK	-

Last Command: dsptrks

Next Command:

dsprkstats

Displays the trunk port status, ATM cell loss counts, cell payload errors, and cell header errors for the specified trunk. Table 4-28 lists the other statistics. If you include the optional *clear* parameter, **dsprkstats** execution clears the statistics.

Table 4-28 Additional Statistics in the dsprkstats Display

Statistics	Description
Cells dropped due to BFrame parity err.	A parity error was detected in one or more of the P bits in the BFrame header or in the BIP-16 parity check for the header causing the cell to be dropped.
Cell header mismatch error count.	A count of cells received by a BNI in this slot.port with an incorrect header address for that card.
First mismatch cell header VPI/VCI.	This displays the VPI/VCI address of the first header mismatch to be received by the card in this slot.port.
BFrame cell data payload error.	A separate BIP-16 parity check is used for the payload data. This number represents the number of errors detected by this parity check. This does not necessarily cause a cell to be dropped.
BFrame cell loss due to admin access.	Internal to the BNI card is an administrative processor. This statistic is a count of the cells that were lost in an internal administrative shuffle.

Full Name

Display trunks statistics

Syntax

dsprkstats <slot.port> [clear]

Related Commands

cnftrkstats, **dsprkerrs**

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX, IGX (UXM)
Lock	Yes

Example 1

```
dsprkstats 1.1
```

Description

Display cell statistics for ATM trunk 1.1.

System Response

```

sw53          TN      SuperUser      BPX 15      9.1      Sep. 24 1997 23:07 GMT

Trunk 1.1      Status: Clear - OK      Cleared: 04/24/96 17:31:16
Type
Cells dropped due to BFrame parity err      0
Cell header mismatch error count           0
BFrame cell data payload error             0
BFrame cell loss due to disabled chan      0
BFrame cell count(TX)                      8316      non-hipri cells -      52
BFrame cell count(RX)                      12452

First mismatch cell masked VPI/VCI        0
First mismatch cell full VPI/VCI          0

```

Last Command: dsptrkstats 1.1

Next Command:

Example 2

dsptrkstats 11.1

Description

Display cell statistics for ATM trunk 11.1 on a UXM card.

System Response

```

sw199          TN      SuperUser      IGX 16      9.1      Aug. 27 1997 19:26 PDT

Trunk 11.1-2  Status: Clear - OK
Collection Time: 0 day(s) 00:49:40
Type                                                    Count
QBIN: NTS Cells Tx to line                               0
QBIN: Tx NTS Cells Received                              0
QBIN: Tx NTS Cells Discarded                             0
QBIN: Hi-Pri Cells Tx to line                           2561
QBIN: Tx Hi-Pri Cells Received                           2561
QBIN: Tx Hi-Pri Cells Discarded                          0
QBIN: Voice Cells Tx to line                             0
QBIN: Tx Voice Cells Received                            0
QBIN: Tx Voice Cells Discarded                           0
QBIN: TimeStamped Cells Tx to ln                         0
QBIN: Tx TS Cells Received                               0
QBIN: Tx TS Cells Discarded                              0
QBIN: BData A Cells Tx to line                           0
QBIN: Tx BData A Cells Received                           0
QBIN: Tx BData A Cells Discarded                          0
QBIN: BData B Cells Tx to line                           0
QBIN: Tx BData B Cells Received                           0
QBIN: Tx BData B Cells Discarded                          0
QBIN: Tx CBR Cells Served                                0
QBIN: Tx CBR Cells Received                              0
QBIN: Tx CBR Cells Discarded                              0
QBIN: Tx VBR Cells Served                                0
QBIN: Tx VBR Cells Received                              0
QBIN: Tx VBR Cells Discarded                              0
QBIN: Tx ABR Cells Served                                0
QBIN: Tx ABR Cells Received                              0
QBIN: Tx ABR Cells Discarded                              0
VI: Cells received                                       655
VI: Cells transmitted                                     653
VI: Cells received w/CLP=1                               0
VI: Cells transmitted w/CLP=1                             0
VI: Cells received w/CLP=0                               655
VI: Cells transmitted w/CLP=0                             653
VI: Cells discarded w/CLP=1                               0
VI: Cells discarded w/CLP=0                               0
VI: OAM cells received                                    0
VI: OAM cells transmitted                                  0
VI: RM cells received                                     0
VI: RM cells transmitted                                  0
CGW: Packets Rx From Network                             0
CGW: Cells Tx to Line                                    0
CGW: NIW Frms Relayed to Line                            0
CGW: SIW Frms Relayed to Line                            0
CGW: Aborted Frames Tx to Line                           0
CGW: Dscd Pkts                                           0
CGW: 0-Length Frms Rx from Network                       0
CGW: Bd CRC16 Frms Rx from Network                       0
CGW: Bd Length Frms Rx from Network                      0
CGW: OAM RTD Cells Tx                                    0
CGW: Packets Tx to Network                               0
CGW: Cells Rx from Line                                   0
CGW: NIW Frms Relayed from Line                           0
CGW: SIW Frms Relayed from Line                           0
CGW: Aborted Frms Rx From Line                           0
CGW: Dscd Cells                                           0
CGW: 0-Lngth Frms Rx from Line                           0
CGW: Bd CRC32 Frms Rx from Line                           0
    
```

```

CGW: Bd Lngth Frms Rx from Line          0
CGW: OAM RTD Cells Rx                    0
CGW: OAM Invalid OAM Cells Rx           0
CF: Egress Packet Sequence Errs         0
CF: Egress Bad HEC from cellbus         0
CF: Egress Packets from cellbus         0
CF: Egress Cells Tx to Line             0
CF: Ingress Packets to cellbus          0
CF: Ingress Cells from Line             0
IE: Egress Packets to Extract Buf       0
IE: Egress Cells injected               0
IE: Egress Packets Extract Buf full     0
IE: Ingress Cells to Extract Buf        0
IE: Ingress Packets injected            0
IE: Ingress Cells Extract Buf full     0
Last Command: dsptrkstats 11.1

```

Next Command:

Table 4-29 dsptrkstats-Parameters

Parameter	Description
slot.port	Specifies the physical part of the logical trunk number.

Table 4-30 dsptrkstats-Optional Parameters

Parameter	Description
clear	Directs the system to clear the statistics counters.

prtnw

Prints the network topology table. Alarms print in a column, and added trunks (by **addtrk**) appear to the right to the node name. Each trunk entry shows the local back card slot number and the node name and back card slot number on the other end of the line. Note the following conventions:

- ~ indicates the trunk is a satellite line.
- Flashing entry indicates a failed line.
- Blinking node indicates a node is executing downloader software.

Parameters set Zero Coded Suppression (ZCS) display characteristics. ZCS writes a 1 over the least significant bit of any byte that contains 0s. The purpose is to ensure a minimum occurrence of 1s so that the receiving node can extract timing information. The **prtnw** command uses the same syntax and prints the same information as the **dspnw** command.

Full Name

Print network

Syntax

prtnw [+b | -b] [+z | -z]

Related Commands

dspnw

Attributes

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

Example 1

```
prtnw
```

Description

Print the network topology.

System Response

(No screen display appears—just a printout.)

Table 4-31 prtnw-Parameters

Parameter	Description
+b	Display only the lines that support bursty data.
-b	Display only the lines that do not support bursty data.
+z	Display only the lines that use ZCS encoding.
-z	Display only the lines that do not use ZCS encoding.

prtrkict

Prints the interface control template of a subrate trunk. For a list of configurable outputs and configuration steps, see the **cnftrkict** description. The printed information includes:

- Specified line.
- Associated leads and their status
- Whether output follows a local input
- Name of the local or remote input lead that the output lead follows

Full Name

Print trunk interface control template

Syntax

prtrkict <line>

Related Commands

dsprkict

Attributes

Privilege	1–2
Jobs	Yes
Log	No
Node	IPX, IGX
Lock	Yes

Example 1

```
prtrkict
```

Description

Print network topology.

System Response

(No screen display—just a printout.)

Table 4-32 prtrkict–Parameters

Parameter	Description
line	Specifies the trunk interface control template.

prtrks

Prints the trunk configuration for the node. This command uses the same syntax and prints the same information as the **dsprks** command. Configuration information for trunks includes the trunk number and the type of line (T3, E3, and so on). For trunks that have been added to the network with the **addtrk** command, the configuration information also includes the node name and trunk number at the other end of the line.

Note the following printout characteristics:

- Those trunks that show a “–” in the “Other End” column, have been *upped* with the **uptrk** command but not yet *added* with the **addtrk** command.
- The Other End column shows the node name and slot number of the other end of the trunk.
- Names of disabled trunk appear as light text in the printout.

Full Name

Print trunks

Syntax

prtrks

Related Commands

dsprks

Attributes

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

Example 1

```
prtrks
```

Description

Print trunk configuration for the node.

System Response

(No screen display appears—just a printout.)

uptrk

Activates (or “ups”) a trunk and, if you include the optional *vtrk* parameter for applicable cards, activates the trunk as a virtual trunk.

After you have upped the trunk but not yet added it, the trunk carries line signalling but does not yet carry live traffic. Before you add the trunk with **addtrk**, the node can monitor the trunk for reliability. Once a trunk has shown reliability and is ready to go into service, add the trunk to the network. If you need to take an active trunk out of service, use **dntrk**. The **dntrk** command causes the node to reroute any existing traffic if sufficient bandwidth is available.

You cannot mix physical and virtual trunk specifications. For example, after you up a trunk as a standard trunk, you cannot add it as a virtual trunk when you execute **addtrunk**. Furthermore, if you want to change trunk types between standard and virtual, you must first down the trunk with **dntrk**, then up it as the new trunk type.

You cannot up a trunk if the required card is not available. Furthermore, if a trunk is executing self-test, a “card in test” message may appear on-screen. If this message appears, re-enter **uptrk**.

If, after upping a BXM trunk, you get a message telling you to use **cnfrsrc** to configure PVCs, make sure that when configuring resource partitions with **cnfrsrc**, you specify values greater than 0 for the Maximum PVC Channels, Maximum PVC Bandwidth, and Maximum VSI LCNs. Otherwise, you will be unable to create any PVCs on a BXM card. Also, you will not be able to change the Connection Channels amount with **cnftrk** if you do not first use **cnfrsrc** to configure PVCs.

Full Name

Up trunk

Syntax

uptrk <slot.port>[.vtrk]

uptrk <slot.start-port-end-port> for IMA

Related Commands

addtrk, **dntrk**, **cnfrsrc**

Attributes

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

Example 1

```
uptrk 21
```

Description

Activate (up) trunk 21—a single-port card, in this case, so only the slot is necessary.

Example 2

```
uptrk 6.1.1
```

Description

Activate (up) trunk 6.1.1—in this case, a virtual trunk, as indicated by the third digit.

Table 4-33 uptrk-Parameters

Parameter	Description
slot.port	Specifies the slot and port of the trunk to activate. If the card has only one port, the <i>port</i> parameter is not necessary. An NTM card, for example, has one port.
slot.start port-end port	Specifies the slot and range of ports on an IMA trunk to activate.

Table 4-34 uptrk-Optional Parameters

Parameter	Description
<i>vtrk</i>	Specifies the virtual trunk number. The maximum on a node is 32. The maximum on a T3 or E3 line is 32. The maximum for user traffic on an OC3/STM1 trunk is 11 (so more than one OC3/STM1 may be necessary). See also the section called “Setting Up a Virtual Trunk” at the front of this chapter.

Setting Up Lines

A circuit line is the physical line that carries frame relay, data, voice, or ATM traffic between customer equipment and an IPX, IGX, or BPX node. Each piece of customer premises equipment is attached to a node through a circuit line. After a *card* has been “upped” with the **upcd** command, a *circuit line* on that card can be “upped” and configured.

This chapter:

- Describes input circuit line formats
- Summarizes circuit line card combinations
- Explains how to set up lines
- Describes each command

Note “Line” commands are the same as “circuit line” commands. For example, **cnfcln** is the same as **cnfln**. Whether you use **cnfcln** or **cnfln**, switch software prompts for the parameters appropriate for the card type it detects.

The following table shows the permissible card combinations for CPE-to-IPX and IGX lines.

Table 5-1 Input Line Formats

Type	Country	Electrical Signal Format	Ones Density Enforcement	Multiplexing
J1	Japan	Coded Mark Inversion (CMI)		31 channels @ 64kbps each
E1	Others	Alternate Mark Inversion (AMI)	High density bipolar 3 (HDB3)	31 channels @ 64kbps each 1 E1 line on CDP/CVM, FRP/FRM 8 E1 lines on UFM
T1	USA Canada ASIA	Alternate Mark Inversion (AMI)	Bipolar Zero Substitution (B8ZS)	24 channels @ 64kbps each 1 T1 line on CDP/CVM, FRP/FRM 8 T1 lines on UFM
E3	Europe and others	Physical Layer Convergence Protocol per AT&T publication; ITU I-361 with HEC for E3	HDB3	ITU-T G.804, G.832
T3	USA Canada	Physical Layer Convergence Protocol per AT&T publication TA-TSY-00772 and 000773 for T3	B3ZS	M13 mode

Table 5-2 Line Card Combinations

Service	Node Type	Front Card	Back Card
ATM	IGX	UXM	BC-UAI BC-UAI BC-UAI-IT1 BC-UAI-1E1 BC-UAI-1OC3
ATM	IGX	ALM/A	BC-UAI-IT3 BC-UAI-1E3
Frame Relay	IGX	UFM-4C, UFM-8C	UFI-8T1-DB15, UFI-8E1-DB15, UFI-8E1-BNC
Frame Relay	IPX/IGX	FRP-6, FRP-31/FRM-6, FRM-31	FRI-T1, FRI-E1
Frame Relay	IGX	UFM-C	UFI-8T1-DB15 UFI-8E1-DB15 or UFI-8E1-BNC
High Speed Data	IPX/IGX	SDP/HDM	SDI/RS-232 SDI/RS-422
High Speed Data	IPX/IGX	SDP/HDM	SDI/RS-232 SDI/RS-422
Voice	IGX	UVM	BC-UVI-2T1EC BC-UVI-2E1EC BC-UVI-2J1EC
Voice	IPX/IGX	CDP/CVM	BC-T1 BC-E1 BC-J1

Setting Up a Circuit Line

Frame relay, data, and voice connections require an active line. Use the commands in the following steps to establish a line. The card must be in either the active or standby state before you enter these commands.

Step 1 Use **upln** to activate a circuit line in a slot that contains the appropriate circuit line card set.

Step 2 Use **cnfln** to configure the circuit line.

The **upln** and **cnfln** commands establish the general parameters for the line but do not establish specific frame relay, data, or voice parameters. Refer to applicable chapters for details on a particular service. For example, “Data Connections” describes specific commands for data connections, and “Frame Relay Connections” describes specific commands for frame relay connections.

Other Circuit Line Commands

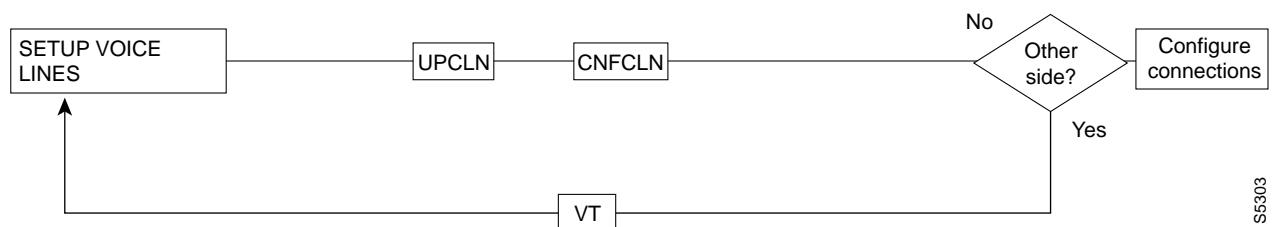
The following describes related commands.

- **dnln**—downs a line. A downed line is inactive, so no signals or statistics are generated. You must remove all connections on a line (**delcon** or **delcongrp**) before you down the line with **dnln**.
- **dsplncnf**—displays the configuration of a specified circuit line.
- **dsplns**—displays the circuit line configuration and alarm status for the node.
- **prtlns**—prints the circuit line configuration and circuit line alarm status for the node.

Flow Diagrams for Line Setup

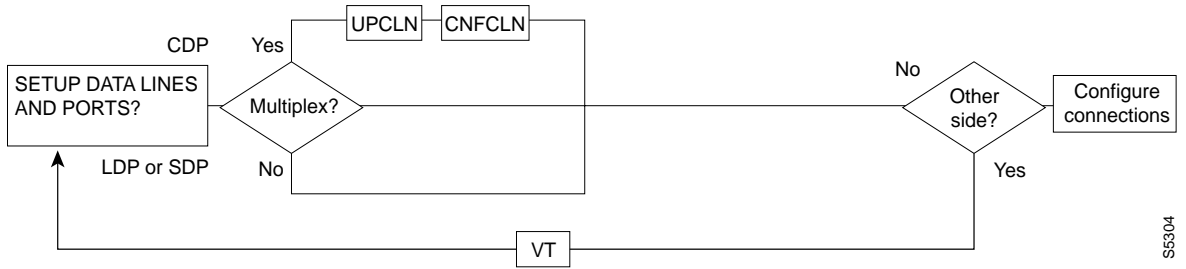
Figure 5-1, Figure 5-2, Figure 5-3, Figure 5-4, and Figure 5-5 show the command sequence for setting up lines for voice, serial data, frame relay, ATM, and FastPADs, respectively. A yes/no decision branch for “Other Side?” and the **vt** command in the sequence indicates command sequences on local and far nodes. “Multiplex” refers to channelized streams.

Figure 5-1 Setting Up Voice Lines



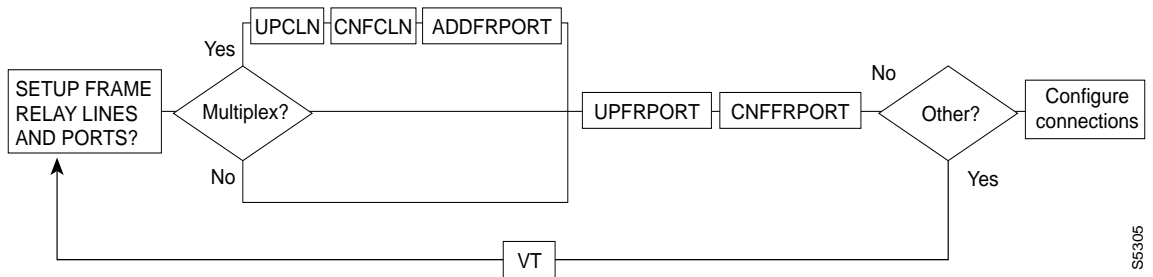
S5303

Figure 5-2 Setting Up Data Lines



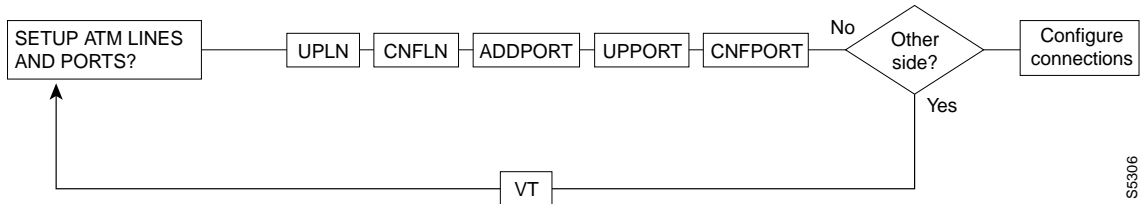
S5304

Figure 5-3 Setting Up Frame Relay Lines



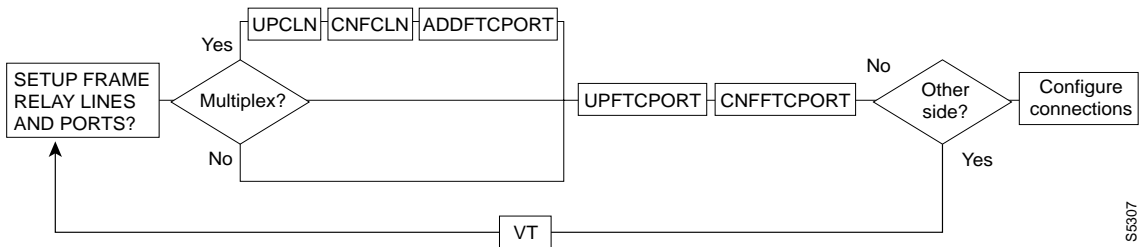
S5305

Figure 5-4 Setting Up ATM Lines



S5306

Figure 5-5 Setting Up FastPAD Lines



S5307

List of Commands

Table 5-3 shows the full command name and starting page for each line command description.

Table 5-3 Line Commands

Mnemonic	Description	Page
cnfcassw	Configure CAS switching	5-6
cnfln	Configure line (same as cnfcln)	5-8
cnfrsrc	Configure resources	5-16
dnln	Down line (same as dncln)	5-16
dsplncnf	Display line configuration (same as dspclncnf)	5-22
dsplns	Display lines (same as dspclns)	5-27
dsptsmap	Display	5-27
prtlns	Print circuit lines (same as prtclns)	5-31
upln	Up line (same as upcln)	5-31

cnfcassw

Configures a UVM to convert channel associated signaling (CAS) and dual-tone multi-frequency (DTMF) tones to common channel signaling (CCS) call control messages. This conversion is necessary for voice networks in which a Voice Network Switch (VNS) uses SVCs to route calls from a CAS-based PBX through a WAN. Model B or later firmware on the UVM is necessary.

Before you can execute **cnfcassw**, note the following:

- The line to which you apply **cnfcassw** must be up.
- If any connections exist on the line, you cannot change the **cnfcassw** parameters. However, you can execute the command to see the current parameters in the **cnfcassw** display.
- You cannot configure a line for both CAS-switching and pass-through.
- With CAS-switching on a UVM that has Y-cable redundancy, the call state of each connection is lost in the event of a switch-over.

Full Name

configure CAS switching

Syntax

```
cnfcassw <line> <mode> <CCS type> <CAS type> <conn type> <country code>  
<interdigit timeout> <tone level> <DTMF duration> <idle pattern> <parameters 6–18>
```

Note For the initial implementation of CAS switching, you should specify only port 1 for the *line* parameter (where *line* has the format *slot.port*) and select “PBX-end” for *mode*.

Related Commands

dspln, dsplncnf

Attributes

Privilege	1–2
Jobs	No
Log	Yes
Node	IGX
Lock	Yes

Example 1

```
cnfcassw 5.1
```

Description

Configure port 1 of the UVM in slot 5 to support CAS switching.

System Response

```
sw175          TN      SuperUser      IGX 16      9.1 Sep. 17 1997 06:11 PST
```

```
Line 5.1 CAS Switching Parameters
```

```
=> CASSW mode      [OFF]                      Parm 11      [00] (H)
   CCS Type        [ 1] (D)      Parm 12      [00] (H)
   CAS Type        [ 1] (D)      Parm 13      [00] (H)
   Conn Type       [a32 ]      Parm 14      [00] (H)
   Country code    [00] (H)      Parm 15      [00] (H)
   Interdigit TO   [05] (H)      Parm 16      [00] (H)
   Tone level      [00] (H)      Parm 17      [00] (H)
   DTMF duration   [0C] (H)      Parm 18      [00] (H)
   Idle pattern    [54] (H)
   Parm 6          [00] (H)
   Parm 7          [00] (H)
   Parm 8          [00] (H)
   Parm 9          [00] (H)
   Parm 10        [00] (H)
```

```
This Command: cnfcassw 5.1
```

```
Enter mode: Pbx/Server/Off (o):
```

Table 5-4 cnfcassw-Parameters

Parameter	Description	Default
line	Specifies the line in the format <i>slot.port</i> . The line must be up before you can execute <i>cnfcassw</i> .	
mode	Possible entries are “p” for PBX-end, “s” for server-end, or “o” for off. The applications are as follows: <ul style="list-style-type: none"> • PBX-end applies to a UVM connected to a PBX. Specify PBX-end mode if you plan to add the signaling channel (using addcon) at the UVM connected to the PBX (rather than the CVM or UVM connected to the VNS). • Server-end applies to a UVM connected to the VNS. Specify Server if you plan to add the signaling channel (using addcon) at the UVM connected to the VNS (rather than the PBX). • Off means the UVM is not in CAS-switching mode. 	off
CCS type	The range of entries 1–4. A 1 selects Q.SIG.	1
CAS type	The range is 1–32. A 1 specifies AB signaling for 2-wire E&M line.	1
connection type	Specifies the type of voice connection. Valid entries are a32 and a24.	a32
country code	The range is 0–0xFF. A 0, for example is the U.S.	0
interdigit timeout	The range is 0–0xFF, where each hexadecimal value you enter is a multiplier of 50 millisecond increments.	05, which results in 250 ms.
tone level	Specifies the dB level of the DTMF below 0 dBm. The range is 0–0xFF.	00 for 0 dB
DTMF duration	Specifies the DTMF on/off duration. The range is 0–0xFF, and the value you enter is multiplied by 5 millisecond increments.	0C, which results in 60 ms on then 60 ms off.
idle pattern	Specifies the data pattern for the data channel. The range is 0–0xFF.	7F for T1, 54 for E1 line
parms 6–19	Parameters 6-18 are reserved for future use.	00

cnfln

Configures a line to be compatible with the device to which it connects. The **cnfln** command applies to voice, data, frame relay, and ATM lines. See Table 5-2 for a list of the front and matching back cards. Because of the variety of line types and characteristics, the parameters section of this description has three tables to describe the parameters. The system automatically presents the correct options on the command line for each line type. If a parameter is not applicable to a card type, the system displays the parameter in half-tone or the value field of that parameter with dashed lines. Table 5-5 describes the parameters for voice, data, and frame relay parameters. Table 5-6 describes the parameters for the ATM Line Module (ALM/A). Table 5-7 describes the parameters for the ASI line card (BPX node). Table 5-8 describes the ATM parameters for the UXM card (IGX node).

For an ALM/A, the **cnfln** command lets you configure the receive rate and header type and enable payload scrambling. For more details on the features and configurable parameters of the ALM/A, refer to the *Cisco IGX 8400 Series Reference* and the *Cisco IGX 8400 Series Installation* manuals. Note that, although the **cnfln** display shows the transmit rate, you cannot configure it because the ALM/A transmit rate is always the maximum line rate.

Note The **cnfln** command is the same as **cnfcln**.

Full Name

configure line

Syntax

cnfln <line> <parameters>

Related Commands

dspln, dsplncnf, dsptsmap

Attributes

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

Example 1

```
cnfln 14
```

Description

Configure voice line 14.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 09:55 PST

CLN 14 Configuration  T1/24          CDP slot: 13
Loop clock:          --

Line framing:        --
coding:              --
CRC:                 --
recv impedance:     --
E1 signalling:      --
encoding:            --
T1 signalling:      --
cable type:         --
length:             --
56KBS Bit Pos:     --
pct fast modem:    --

Last Command: cnfcln 14

Next Command:

```

Example 2

```
cnfcln 7 n 2
```

Description

Configure a frame relay T1 line for the following options: no loop clock and a receive impedance of 75 ohms.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 09:55 PST

CLN 14 Configuration  T1/24 FRPslot: 13
Loop clock:          --

Line framing: ESF
coding:              ZCS
CRC:                 --
recv impedance:     --
E1 signalling:      --
encoding:            --
T1 signalling:      --
cable type:         ABAM
length:             0-133 ft.
56KBS Bit Pos:     --
pct fast modem:    --

Last Command: cnfcln 7 n 2

Next Command:

```

Example 3

```
cnfln 4.2 7F 0 N
```

Description

Configure ASI port 4.2 with an idle code 7F and without payload scrambling.

System Response

```
ca19          VT   SuperUser      BPX 15    9.1    Aug. 23 1997 19:11 GMT

LN  4.2 Configuration T3    [96000 cps]  ASI-T3 slot:4
Loop clock:          --          Idle code:          7F hex

Line framing:        --
coding:              --
CRC:                 --
recv impedance:     --
E1 signalling:      --
encoding:            --          cable type:
T1 signalling:      --          length:             0-450 ft.
                                HCS Masking:             Yes
                                Payload Scramble:         No

56KBS Bit Pos:      --
pct fast modem:     --
```

```
Last Command: cnfln 4.2 7F 0 N
```

```
Next Command:
```

Example 4

```
cnfln 12
```

Description

Configure the ALM/A in slot 12.

System Response

```
reach          TN      SuperUser      IGX 16      9.1 July 22 1997 12:39 PDT

LN 12 Config   T3/3    [452 cps]    ALM slot: 12
Transmit Line Rate: 96000 cps
Receive Line Rate: 452 cps
Header Type:    VCC
Payload Scramble Yes
```

Last Command: cnfln 12 452 vcc y

Next Command:

Example 5

```
cnfln 10.1 N D4 ZCS AB 4 20 _
```

Description

Configure line 1 on the UVM in slot 10 with no loop clock, D4 framing, Zero Code Suppression coding, AB T1 signalling, and 20% expected channel utilization by a high speed modem.

System Response

```
sw176          TN      SuperUser      IGX 16      9.1.0      Sep. 15 1997 13:37 PST

LN 10.1 Config      T1/24          UVM slot: 10
Loop clock:         No

Line framing:       D4          cnfg:          External
coding:             ZCS          slot.line:    --
CRC:                --          CAS-switching: PBX-end
recv impedance:    --          SVC-Caching   : On
E1/J1 signalling:  --
encoding:           u-law
T1 signalling:     AB
cable type:        ABAM
length:            0-133 ft.
56KBS Bit Pos:    msb
pct fast modem:    20
```

This Command: cnfln 10.1 N D4 ZCS AB 4 20 _

Turn on SVC-Caching (Y):

This release has added a prompt for configuration of a UVM line for SVC Caching. It is also supported on CVM lines on the IPX. The SVC Caching feature speeds up call setup for most VNS controlled calls by avoiding some of the call setup/tear-down operations when a call originates or terminates.

Refer to the *VNS Installation and Configuration Manual* for more information on SVC Caching.

Table 5-5 cnfln–Voice, Frame Relay, or Data Parameters

Parameter	Description	Default																											
slot or slot.line	Specifies the line. If the back card has one line connector and cable, enter the slot number. If the card has more than one physical line, include a line number. If the card is a UVM, however, enter just the slot number.																												
loop clock	Enables the transmit and receive control leads to use the same clock. Format for the parameter is Y or N	N																											
line framing	Configures T1 line framing to be D4 or ESF. Note that UFM-C series is ESF only.	D4 (ESF on UFM/FRM)																											
line coding	Configures T1 and E1 coding: T1: ZCS B8ZS AMI E1:HDB3 ZCS	ZCS B8ZS for FRM HDB3																											
line CRC on	Enables CRC-4 detection for E1 lines. Use either Y or N	N																											
E1 recv impedance	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Impedance</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>75 ohm</td> <td>unbalanced</td> </tr> <tr> <td>2</td> <td>75 ohm</td> <td>balanced</td> </tr> <tr> <td>3</td> <td>120 ohm</td> <td>balanced</td> </tr> <tr> <td>4</td> <td>0–133 ft</td> <td>ABAM cable</td> </tr> <tr> <td>5</td> <td>133–266 ft</td> <td>ABAM cable</td> </tr> <tr> <td>6</td> <td>266–399 ft</td> <td>ABAM cable</td> </tr> <tr> <td>7</td> <td>399–533 ft</td> <td>ABAM cable</td> </tr> </tbody> </table>	Parameter	Impedance	Description	1	75 ohm	unbalanced	2	75 ohm	balanced	3	120 ohm	balanced	4	0–133 ft	ABAM cable	5	133–266 ft	ABAM cable	6	266–399 ft	ABAM cable	7	399–533 ft	ABAM cable	1			
Parameter	Impedance	Description																											
1	75 ohm	unbalanced																											
2	75 ohm	balanced																											
3	120 ohm	balanced																											
4	0–133 ft	ABAM cable																											
5	133–266 ft	ABAM cable																											
6	266–399 ft	ABAM cable																											
7	399–533 ft	ABAM cable																											
signaling	E1: Common channel signaling (CCS) or ABCD signaling bits with channel associated signaling (CAS) T1: ABCD or ABAB (with ESF line framing) or AB (with D4 line framing); CCS is available in timeslot 24 if applicable PBXs need it.	CAS AB																											
encoding	A-law μ -law	depends on the back card																											
cable type/length	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Voice Circuits</th> <th>Frame Relay Circuits</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0-220 ft. MAT cable</td> <td>CSU Network Interface</td> </tr> <tr> <td>2</td> <td>220-440 ft MAT cable</td> <td>0–133 ft ABAM cable</td> </tr> <tr> <td>3</td> <td>440-655 ft MAT cable</td> <td>133–266 ft ABAM cable</td> </tr> <tr> <td>4</td> <td>0-133 ft ABAM cable</td> <td>266–399 ft ABAM cable</td> </tr> <tr> <td>5</td> <td>133-266 ft ABAM cable</td> <td>399–533 ft ABAM cable</td> </tr> <tr> <td>6</td> <td>266-399 ft ABAM cable</td> <td>533–655 ft ABAM cable</td> </tr> <tr> <td>7</td> <td>399-533 ft</td> <td>not used</td> </tr> <tr> <td>8</td> <td>533-655 ft</td> <td>not used</td> </tr> </tbody> </table>	Parameter	Voice Circuits	Frame Relay Circuits	1	0-220 ft. MAT cable	CSU Network Interface	2	220-440 ft MAT cable	0–133 ft ABAM cable	3	440-655 ft MAT cable	133–266 ft ABAM cable	4	0-133 ft ABAM cable	266–399 ft ABAM cable	5	133-266 ft ABAM cable	399–533 ft ABAM cable	6	266-399 ft ABAM cable	533–655 ft ABAM cable	7	399-533 ft	not used	8	533-655 ft	not used	4
Parameter	Voice Circuits	Frame Relay Circuits																											
1	0-220 ft. MAT cable	CSU Network Interface																											
2	220-440 ft MAT cable	0–133 ft ABAM cable																											
3	440-655 ft MAT cable	133–266 ft ABAM cable																											
4	0-133 ft ABAM cable	266–399 ft ABAM cable																											
5	133-266 ft ABAM cable	399–533 ft ABAM cable																											
6	266-399 ft ABAM cable	533–655 ft ABAM cable																											
7	399-533 ft	not used																											
8	533-655 ft	not used																											

Parameter	Description	Default
56kbs bit stuffing	most significant byte (msb) least significant byte (lsb)	msb
pct fast modem	Expected ADPCM fast connections (range 0-100). High speed modems preclude the use of ADPCM. Consequently, channel load requirements increase over that required for a voice channel. The pct fast modem parameters specify the expected channel utilization (%) by a high speed modem.	20

Table 5-6 cnfln-ATM (ALM/A) Parameters

Parameter	Description
line	Identifies the line. The line is the slot number of the ALM/A.
receive rate	Specifies the receive rate for the line. The range for a T3 line is 150 cells per second (cps) through 96000 cps. For an E3 line, the range is 150 cps-96000 cps.
header type	The header type is either VCC or VPC. The default is VCC. Refer to the IGX-related documentation for an explanation of the header type on the ALM/A.
payload scramble	Enables or disables payload scramble. The default is No.

Table 5-7 cnfln-ATM (ASI) Parameters

Parameter	Description																								
line number	Specifies the ASI line to configure																								
line options	Specifies the ATM line options:																								
	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> <th>Options</th> <th>Default</th> </tr> </thead> <tbody> <tr> <td>Loop clock</td> <td>Enable loop clocking</td> <td>Yes/No</td> <td>No</td> </tr> <tr> <td>Idle Code</td> <td>Hex data placed in unused payload of cells.</td> <td>0 - FF (hex)</td> <td>7F</td> </tr> <tr> <td>Cable Type/Length</td> <td>Length and type of cable used for trunk.</td> <td>1 = 0 - 225 2 = >225</td> <td>1</td> </tr> <tr> <td>HCS Masking</td> <td>Masking of cell header checksum to disable error checking.</td> <td>Yes No</td> <td>Yes</td> </tr> <tr> <td>Payload Scramble</td> <td>Whether or not to scramble (randomize) the cell payload data. Note: for E3, this must always be set to Yes.</td> <td>Yes No</td> <td>No</td> </tr> </tbody> </table>	Parameter	Description	Options	Default	Loop clock	Enable loop clocking	Yes/No	No	Idle Code	Hex data placed in unused payload of cells.	0 - FF (hex)	7F	Cable Type/Length	Length and type of cable used for trunk.	1 = 0 - 225 2 = >225	1	HCS Masking	Masking of cell header checksum to disable error checking.	Yes No	Yes	Payload Scramble	Whether or not to scramble (randomize) the cell payload data. Note: for E3, this must always be set to Yes.	Yes No	No
Parameter	Description	Options	Default																						
Loop clock	Enable loop clocking	Yes/No	No																						
Idle Code	Hex data placed in unused payload of cells.	0 - FF (hex)	7F																						
Cable Type/Length	Length and type of cable used for trunk.	1 = 0 - 225 2 = >225	1																						
HCS Masking	Masking of cell header checksum to disable error checking.	Yes No	Yes																						
Payload Scramble	Whether or not to scramble (randomize) the cell payload data. Note: for E3, this must always be set to Yes.	Yes No	No																						

Table 5-8 cnfln–ATM (UXM) Parameters

Parameter	Description			
slot.line	Specifies which line on which slot to configure			
line options	Specifies the ATM line options:			
	Parameter	Description	Options	Default
	Loop clock	Enable loop clocking	Yes/No	No
	Idle Code	Hex data placed in unused payload of cells.	0 - FF (hex)	7F
	HCS Masking	Masking of cell header checksum to disable error checking.	Yes No	Yes
	Payload Scramble	Whether or not to scramble (randomize) the cell payload data. Note: for E3, this must always be set to Yes.	Yes No	Yes
	Frame Scramble	Whether or not to scramble (randomize) the frame data. Note: for E3, this must always be set to Yes.	Yes No	No
	Cell Framing	Choose the cell framing format. Select either STS-3C (SONET) or STM-1 (SDH).	STS-3C STM-1 PLCP HEC	STS-3C for OC3 PLCP for T3 HEC for E3

cnfrsrc

Use the **cnfrsrc** command to partition resources for AutoRoute PVCs and VSI-Tag Switching.

Full Name

Configure resource

Syntax

cnfrsrc <slot number>.<port number>

Related Commands

dsprsrc

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	BPX
Lock	No

Example

```
cnfrsrc 13.1
```

Description

Partition resources on the OC3 trunk on port 1 of slot 13 on the BPX to support a service such as Tag Switching (or Auto Route PVCs or PNNI SVCs).

System Response

```

n4          TN      SuperUser      BPX 15      9.1      Apr. 4 1998 16:40 PST
Port/Trunk : 4.1
Maximum PVC LCNS:          256      Maximum PVC Bandwidth:26000
Min Lcn(1) : 0 Min Lcn(2) : 0
Partition 1
Partition State :          Enabled
Minimum VSI LCNS:          512
Maximum VSI LCNS:          7048
Start VSI VPI:             2
End VSI VPI :              15
Minimum VSI Bandwidth :    26000      Maximum VSI Bandwidth :      100000

Last Command: cnfrsrc 4.1 256 26000 1 e 512 7048 2 15 26000 100000

Next Command:

```

Table 5-9 cnfrsrc-Parameters

Parameter	Description
slot.port	Specifies the BXM card slot and port number.
Maximum PVC Channels	<p>The maximum number of LCNs allocated for AutoRoute PVCs for this port. The range is 1 to 256. 256 is the default. For trunks, there are additional LCNs allocated for AutoRoute that are not configurable.</p> <p>You can use the dspec <slot> command to display the maximum number of LCNs configurable by using the cnfrsrc command for the given port. For trunks, “configurable LCNs” represent the LCNs remaining after the BCC has subtracted the “additional LCNs” needed.</p> <p>For a port card, a larger number is shown, as compared with a trunk card.</p> <p>Setting this field to “0” would enable configuring all of the configurable LCNs to the VSI.</p> <p>Note that you must specify a value greater than 0 for the Maximum PVC Channels, Maximum PVC Bandwidth, and Maximum VSI LCNs parameters. Otherwise, you will not be able to create more than two PVCs on a BXM card. Also, if these parameters do not have values greater than 0, you will be unable to change the connection channel amount when you configure the BXM trunk using cnfrtk.</p>
Maximum PVC Bandwidth	<p>Specifies the maximum bandwidth of the port allocated for AutoRoute use. The range is 0 to 352207. 0 is the default.</p> <p>Note that you must specify a value greater than 0 for the Maximum PVC Channels, Maximum PVC Bandwidth, and Maximum VSI LCNs parameters. Otherwise, you will not be able to create more than two PVCs on a BXM card. Also, if these parameters do not have values greater than 0, you will be unable to change the connection channel amount when you configure the BXM trunk using cnfrtk.</p>
Configure Partition	Answer yes or no to begin configuring resources for the partition.
Partition ID	Specifies the ID number of the partition. The range is 0 to 255. 0 is the default. Always use 0 in Release 9.1.
Enable Partition	Answer yes or no to enable your configured partition.

Parameter	Description
Minimum VSI LCNs	<p>The minimum number of LCNs guaranteed for this partition. The range is 1 to 256. 0 is the default. The VSI controller guarantees at least this many connection endpoints in the partition, provided there are sufficient free LCNs in the common pool to satisfy the request at the time the partition is added. When a new partition is added or the value is increased, it may be that existing connections have depleted the common pool so that there are not enough free LCNs to satisfy the request. The BXM gives priority to the request when LCNs are freed. The net effect is that the partition may not receive all the guaranteed LCNs (min LCNs) until other LCNs are returned to the common pool.</p> <p>You may not increase this value dynamically. However, this may cause the “deficit” condition described above.</p> <p>The command line interface warns the user when the action is invalid, except for the “deficit” condition.</p> <p>To avoid this deficit condition, which could occur with maximum LCN usage by a partition or partitions, it is recommended that all partitions be configured ahead of time before adding connections. Also, it is recommended that all partitions be configured before adding a VSI controller using the addshelf command.</p>
Maximum VSI LCNs	<p>The total number of LCNs the partition is allowed for setting up connections. The minimum VSI LCNs is included in this calculation. If maximum LCNs equals minimum LCNs, then the maximum VSI LCNs are guaranteed for this partition.</p> <p>Otherwise, (max - min) LCNs are allocated from the common pool on a FIFO basis.</p> <p>If the common pool is exhausted, new connection setup requests will be rejected for the partition, even though the maximum LCNs has not been reached.</p> <p>You may increase this value dynamically when there are enough unallocated LCNs in the port group to satisfy the increase.</p> <p>You may not decrease the value dynamically. All partitions in the same port group must be deleted first and reconfigured in order to reduce this value.</p> <p>Different types of BXM cards support different maximum values. If you enter a value greater than the allowed maximum, a message is displayed with the allowable maximum value.</p> <p>Note that you must specify a value greater than 0 for the Maximum VSI LCNs, Maximum PVC Channels, and Maximum PVC Bandwidth parameters. Otherwise, you will not be able to create more than two PVCs on a BXM card. Also, if these parameters do not have values greater than 0, you will be unable to change the connection channel amount when you configure the BXM trunk using cnftrk.</p>
Start VSI VPI	<p>By default the TSC (for example, the 7200 or 7500 series router) will use either a starting VSI VPI of 1 or 2 for tag switching, whichever is available. If both are available, a starting VSI VPI of 1 is used. The VPI range should be 2-15 on a BPX 8260 VSI. The VSI range for tag switching on the BPX 8620 is configured as a VSI partition, usually VSI partition number 1. VSI VPI 1 is reserved for AutoRoute PVCs, so the VSI partition for tag switching should start at VPI 2. If VPI 2 is not to be used, the tag switching VPI interface configuration command can be used on the TSC to override the defaults.</p> <p>The range is 2 to 4095. Always set to 2 for trunks.</p>
End VSI VPI	<p>Two VPIs are sufficient for Release 9.1, although it may be advisable to reserve a larger range of VPIs for later expansion, for example, VPIs 2-15.</p> <p>The range is 2 to 4095.</p>

Parameter	Description
Minimum VSI Bandwidth	The minimum port bandwidth allocated to this partition in cells/sec. (Multiply by 400 based on 55 bytes per ATM cell to get approximate bits/sec.) The range is 0 to 352207. 0 is the default.
Maximum VSI Bandwidth	The maximum port bandwidth allocated to this partition. This value is used for VSI QBIN bandwidth scaling. The range is 0 to 352207. 0 is the default.

dnln

Deactivates (“downs”) a line. After **dnln** executes, the line no longer generates framing, and no statistics are gathered. Before you deactivate a line, use **delcon** to remove all connections on the line and use **dnport** to deactivate the port associated with the line.

Note The **dnln** command is the same as the **dncln** command.

Full Name

Down line

Syntax

dnln <line number>

Related Commands

upcln, dsplns, dsptsmap

Attributes

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

Example 1

```
dnln 12
```

Description

Deactivate line 12.

Table 5-10 dnln-Parameters

Parameter	Description
line number	Specifies the line. If the back card has one line, enter the slot number. If the card has more than one line, include a line number.

Example 2

```
dnln 3.12
```

Description 2

Deactivate line 12 on slot 3.

Table 5-11 dnIn-Parameters for UXM

Parameter	Description
slot.line number	Specifies the slot and line to down on the UXM.

dsplncnf

Displays the configuration of a line. Table 5-12 shows all possible parameters in the display. The fields that actually contain data depend on the type of line.

Table 5-12 Possible Line Configuration Parameters

Screen Item	Description	Options
LN configuration	Line type and the number of channels.	T1 E1
Loop clock	Specifies whether the receive clock is looped back to the transmit clock.	Y N
Line framing	Identifies the type of line framing used by the circuit line.	DS4 for T1 ESF for T1 PLCP for T3/E3 HEC for T3/E3 STS-SC for OC3 STM-1 for OC3
Line coding	Identifies the line coding used by the circuit line.	E1: HDB3, AMI T1: ZCS, B8ZS, AMI
CRC	Specifies the CRC checking on E1 lines	Y N
recv impedance	Nominal impedance for the receive line.	75 ohms balanced or unbalanced 120 ohms balanced
E1 signaling	Identifies the signaling type used for E1.	CCS or ABCD with CAS
encoding	Specifies the voice encoding scheme	μlaw Alaw
T1 signaling	Identifies the signaling type used for T1	ABCD or ABAB (with ESF line framing) or AB (with D4 line framing); CCS is available in timeslot 24 if applicable PBXs need it.
56 kbps Bit Pos:	Position in word for bit stuffing on 56 kbs data channels.	MSB or LSB
Pct fast modem		
Cable type	Specifies the T1 or E1 cable type (used for equalization)	MAT ABAM
Cable length	Specifies the T1 or E1 cable length in feet to the CSU or digital cross-connect.	0–220 220–440 440–655 0–133 133–262 262–393 393–524 524–655 T3/E3 = 0-255 ft. greater than 255 ft.
Cnfg	Applies to the UVM: cnfg shows the mode of an individual UVM port. The <i>slot.line</i> identifies the line.	External, Passing, Blocked, or Inserting See the UVM documentation in the <i>Cisco IGX 8400 Series Reference</i> for a description of these modes.
Transmit Line Rate	Applies to ATM line cards: the display shows the transmit line rate (the direction is away from the node).	The value is always the maximum for the line and is in cells per second (cps): 96000 cps for T3, 80000 cps for E3, or 353208 cps for OC3.

Screen Item	Description	Options
Receive Line Rate	Applies to ATM line cards: the display shows the user-configured receive line rate (the direction is towards the node).	The value is in cells per second (cps). The range is 150–9600 cps for T3, 150–80000 cps for E3, or 353208 cps for OC3.
Header Type	Applies to ATM cards: the display shows the user-specified header type.	The header type is VCC or VPC.
Payload Scramble	Applies to ATM cards: the display shows whether payload scramble is on.	The display shows “Yes” or “No.”

Full Name

display line configuration

Syntax

dsplncnf <line number>

Related Commands

cnfln (obsolete name: **cnfcln**)

Attributes

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

Example 1

```
dsplncnf 5.1
```

Description

Displays configuration for line 1 of the UVM in slot 5. The “cnfg” field shows “External,” so all DS0s terminate on line 1. Also, CAS switching is off, and SVC caching is on.

System Response

```
sw175          TN      SuperUser      IGX 16      9.1 Sep. 17 1997 23:28 PST

LN   5.1 Config      E1/30          UVM slot: 5
Loop clock:        No

Line framing:      On          cnfg:          External
```

```
coding:          HDB3                      slot.line:  --
CRC:            No                        CAS-Switching: Off
recv impedance: 75 ohm + gnd             SVC-Caching  :  On

E1/J1 signalling: CAS
encoding:       A-LAW
T1 signalling:  --
cable type:    --
length:        --
56KBS Bit Pos: msb
pct fast modem: 20

Last Command: dsplncnf 5.1

Next Command:
```

Example 2

dsplncnf 13

Description

Display the configuration of the line card in slot 13. The card in slot 13 is an ALM/A.

System Response

```
swl42          TN      SuperUser          IGX 16      9.1 July 31 1997 12:01 PDT

LN 13 Config   T3/1    [150  cps]    ALM slot: 13
Transmit Line Rate: 96000 cps
Receive Line Rate: 150 cps
Header Type:    VCC
Payload Scramble: No
```

Last Command: dsplncnf 13

Next Command:

Example 3

dsplncnf 12.1

Description

Display the line configuration for 12.1. The card in slot 12 is an ASI in a BPX node.

System Response

```

ca20          LAN   SuperUser      BPX 15    9.1    Aug. 23 1997 10:35 PST

LN 12.1 Configuration T3    [96000 cps]   ASI-T3 slot:12
Loop clock:      --                Idle code:      7F hex

Line framing:    --
coding:         --
CRC:            --
recv impedance: --
E1 signalling:  --
encoding:       --
T1 signalling:  --                cable type:
                                           length:      0-450 ft.
HCS Masking:    --                HCS Masking:  Yes
Payload Scramble: --            Payload Scramble: No

56KBS Bit Pos:  --
pct fast modem: --

```

Last Command: dsplncnf 12.1

Next Command:

Example 4

dsplncnf 7.1

Description

Displays configuration for line 1 of the UXM OC3 card set in slot 7.

System Response

```

sw224        TN   SuperUser      IGX 16    9.0.n2   Aug. 27 1997 16:09 GMT

LN 7.1 Config      OC3                UXM slot: 7
Loop clock:        No
Idle code:         7F hex
HCS Masking:       Yes
Payload Scramble:  Yes
Frame Scramble:    Yes
Cell Framing:      STS-3C

```

Last Command: dsplncnf 7.1

Table 5-13 **dspIncnf-Parameters**

Parameter	Description
line number	Identifies the line in the format <i>slot</i> or <i>slot.line</i> . If the back card has one line connector and cable, enter the slot number. If the card has more than one physical line, such as a UXM, enter a slot and line number. In the case of a UVM, however, enter just the slot number.

dsplns

Displays basic configuration and status information for all the lines on the node. The information includes the line number, the type of line, and the line alarm status. The line type shows whether the line is J1, T3, E3, T1, E1, or OC3 and shows the number of configured DS0s. Line alarm status categories include:

- Clear—Line OK Alarm Information Signal
- Loss of Signal Remote Out of Frame
- Out of Frame Remote Out of Packet Frame
- Minor—Bad clock source Loss of Multiframe

Full Name
display lines

Note The **dspclns** command is the same as the **dsplns** command.

Syntax
dspclns

Related Commands
dncln, dsptrks, upcln

Attributes

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

Example
dsp1ns

Description
Display circuit lines on the node.

System Response

sw109 VT SuperUser IGX 16 9.1 Aug. 20 1997 18:40 PST

Line	Type	Current Line Alarm Status
3	T1/24	Clear - OK
5.1	E1/30	Clear - OK
5.2	E1/30	Clear - OK
5.3	E1/30	Clear - OK
5.7	E1/30	Clear - OK
5.8	E1/30	Clear - OK
7.1	T1/24	Clear - OK
11	E1/30	Clear - OK

Last Command: dsplns

Next Command:

dsptsmap

Use the **dsptsmap** command to display the channel to timeslot mapping usage information on a UVM card on an IGX node or a CDP/CVM card on an IPX node. The **dsptsmap** command is for use with the SVC caching feature which speeds up call setup for most VNS controlled calls. The SVC caching feature avoids some of the call setup/tear-down operations associated with **addcon** and **delcon** as a call originates or terminates. The SVC caching feature reduces the connect time for many switch calls over a busy network.

To use the **dsptsmap** command, the line must have SVC caching enabled on it. You can find out if a channel is disabled by using the **dsptsmap** command.

The **cnfln** command is used to configure the SVC caching parameter setting.

The **dsprcons** command is used to view disabled connections provided the SVC has not been deleted.

The **dsplncnf** command will show the value (On/Off) of the SVC caching mode feature.

Refer to the *VNS Installation and Configuration Manual* for more information on SVC caching.

Full Name

Display the channel to timeslot mapping usage for a UVM on an IGX node, or a CVM line on the IPX.

Note The **dsplcns** command is the same as the **dsplns** command.

Syntax

dsptsmap <line_number>[update_interval]

Related Commands

cnfuparm, cnfln, cnfupcln, dncln, dsprtrks, dspln, dsplncnf

Attributes

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

Example

```
dsptsmap 7.2
```

Description

Display channel to timeslot mapping for a specified line.

Table 5-14 dsptsmap-Parameters

Parameter	Description
line_number	slot.line for UVM or line for CVM/CDP
interval_number	Interval in seconds between screen updates. The default value is controlled by "Screen Update Time" in the cnfuiparm command.

Example

```
dsptsmap 9 1
```

Description

Enabled channels are shown on the screen underlined and in reverse video. Disabled (cached) channels are shown with the channel number underlined and in reverse video, while the timeslot is shown in normal video. Channels that have no connection are shown in normal video for both channel number and timeslot.

For example:

- Channel 1 does not have a connection.
- Channel 2 is an enabled connection carrying traffic.
- Channel 3 is a disabled connection.

The *line_number* parameter is specified in *slot.line* format for UVM and *line* format for CDP/CVM.

Use the optional *update_interval* parameter to control how often the screen gets updated. If no value is entered through the CLI, the value of the "Screen Update Time" parameter set using in the **cnfuiparm** command is used.

System Response

```
sw176          TRM   StrataCom          IGX 16          9.1.0          Sep. 5 1997 11:00 PST
```

```
Line 7.2 Channel to Timeslot Map
```

Chan	TS	Chan	TS	Chan	TS	Chan	TS
-----		-----		-----		-----	
<u>1</u>	1	<u>9</u>	14	<u>17</u>	17		
<u>2</u>	2	10	12	<u>18</u>	5		
<u>3</u>	22	11	18	19	19		
4	5	<u>12</u>	10	<u>20</u>	20		
<u>5</u>	11	13	13	<u>21</u>	21		
6	6	14	9	<u>22</u>	3		
7	7	15	15	23	23		
<u>8</u>	8	16	9	24	24		

```
This Command: dsptsmap 7.2
```

```
Hit DEL key to quit:
```

prtlns

Prints the current line configuration and line alarm status for a node. This command uses the same syntax, and prints the same information as is displayed using the **dsplns** command. See the **dsplns** command for syntax and output information.

Full Name

print line configuration

Syntax

prtlns

Related Commands

dsplns

Attributes

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

Example

```
prtlns
```

Description

This command uses the same syntax and prints the same information as is displayed using the **dsplns** command. See the **dsplns** command for syntax and output information.

Setting Up Lines

A circuit line is the physical line that carries data, voice, frame relay, or ATM traffic between an IPX, IGX, or BPX node and customer premises equipment (CPE). Each piece of customer premises equipment is attached to a node through a circuit line. After a *card* has been “upped” with the **upcd** command, a *circuit line* on that card can be “upped” and configured.

This chapter:

- Describes input circuit line formats
- Summarizes circuit line card combinations
- Explains how to set up lines
- Describes each command

Note “Line” commands are the same as “circuit line” commands. However, the **cnfcln** command is no longer used; use **cnfln** instead. The switch software prompts for the parameters appropriate for the card type it detects.

The following table shows the permissible card combinations for CPE-to-IPX and IGX lines.
QQQ>>>Why aren't card combinations for CPE to BPX lines listed here? Should they be included? Where can I get them?

Table 5-1 Input Line Formats

Type	Country	Electrical Signal Format	Ones Density Enforcement	Multiplexing
J1	Japan	Coded Mark Inversion (CMI)		31 channels @ 64kbps each
E1	Others	Alternate Mark Inversion (AMI)	High density bipolar 3 (HDB3)	31 channels @ 64kbps each 1 E1 line on CDP/CVM, FRP/FRM 8 E1 lines on UFM
T1	USA Canada ASIA	Alternate Mark Inversion (AMI)	Bipolar Zero Substitution (B8ZS)	24 channels @ 64kbps each 1 T1 line on CDP/CVM, FRP/FRM 8 T1 lines on UFM
E3	Europe and others	Physical Layer Convergence Protocol per AT&T publication; ITU I-361 with HEC for E3	HDB3	ITU-T G.804, G.832
T3	USA Canada	Physical Layer Convergence Protocol per AT&T publication TA-TSY-00772 and 000773 for T3	B3ZS+	M13 mode

Table 5-2 Line Card Combinations

Service	Node Type	Front Card	Back Card
ATM	IGX	UXM	BC-UAI BC-UAI BC-UAI-IT1 BC-UAI-1E1 BC-UAI-1OC3
ATM	IGX	ALM/A	BC-UAI-IT3 BC-UAI-1E3
Frame Relay	IGX	UFM-4C, UFM-8C	UFI-8T1-DB15, UFI-8E1-DB15, UFI-8E1-BNC
Frame Relay	IPX/IGX	FRP-6, FRP-31/FRM-6, FRM-31	FRI-T1, FRI-E1
Frame Relay	IGX	UFM-C	UFI-8T1-DB15 UFI-8E1-DB15 or UFI-8E1-BNC
High Speed Data	IPX/IGX	SDP/HDM	SDI/RS-232 SDI/RS-422
High Speed Data	IPX/IGX	SDP/HDM	SDI/RS-232 SDI/RS-422
Voice	IGX	UVM	BC-UVI-2T1EC BC-UVI-2E1EC BC-UVI-2J1EC

Service	Node Type	Front Card	Back Card
Voice	IPX/IGX	CDP/CVM	BC-T1 BC-E1 BC-J1

Setting Up a Circuit Line

Frame relay, data, and voice connections require an active line. Use the commands in the following steps to establish a line. The card must be in either the active or standby state before you enter these commands.

Step 1 Use **upln** to activate a circuit line in a slot that contains the appropriate circuit line card set.

Step 2 Use **cnfln** to configure the circuit line.

The **upln** and **cnfln** commands establish the general parameters for the line but do not establish specific frame relay, data, or voice parameters. Refer to applicable chapters for details on a particular service. For example, “Data Connections” describes specific commands for data connections, and “Frame Relay Connections” describes specific commands for frame relay connections.

Other Circuit Line Commands

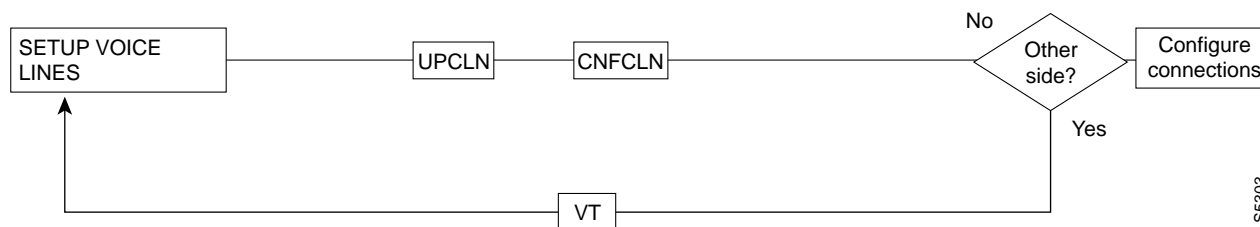
The following describes related commands.

- **dnln**—downs a line. A downed line is inactive, so no signals or statistics are generated. You must remove all connections on a line (**delcon** or **delcongrp**) before you down the line with **dnln**.
- **dsplcnf**—displays the configuration of a specified circuit line.
- **dsplns**—displays the circuit line configuration and alarm status for the node.
- **prtlns**—prints the circuit line configuration and circuit line alarm status for the node.

Flow Diagrams for Line Setup

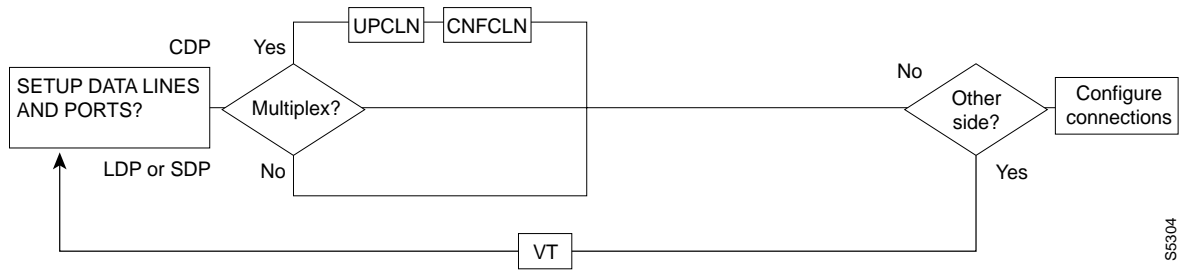
Figure 5-1, Figure 5-2, Figure 5-3, Figure 5-4, and Figure 5-5 show the command sequence for setting up lines for voice, serial data, frame relay, ATM, and FastPADs, respectively. A yes/no decision branch for “Other Side?” and the **vt** command in the sequence indicates command sequences on local and far nodes. “Multiplex” refers to channelized streams.

Figure 5-1 Setting Up Voice Lines



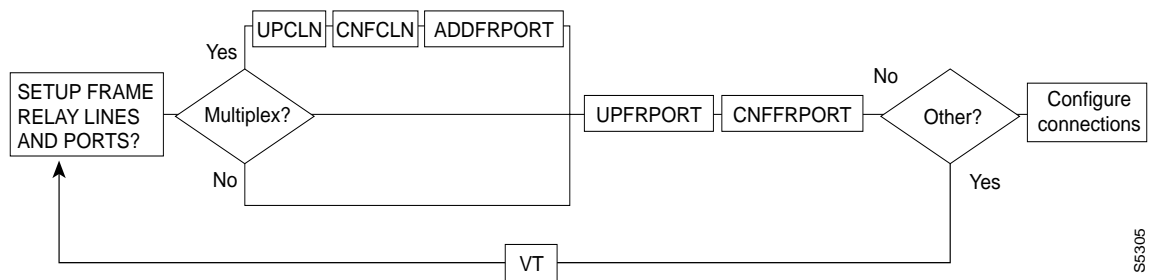
S5303

Figure 5-2 Setting Up Data Lines



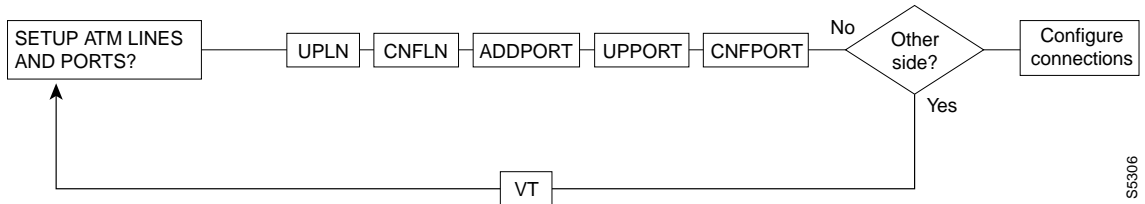
S5304

Figure 5-3 Setting Up Frame Relay Lines



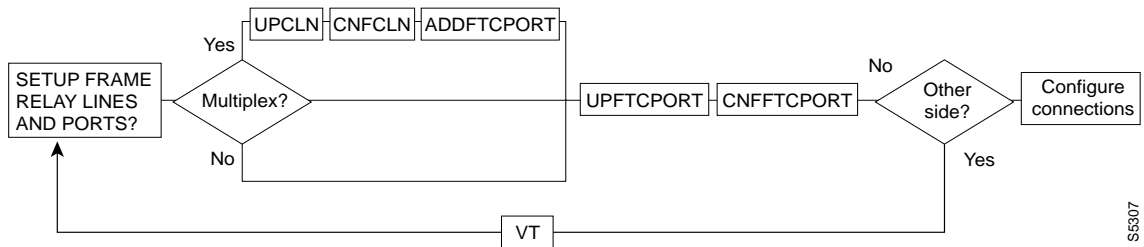
S5305

Figure 5-4 Setting Up ATM Lines



S5306

Figure 5-5 Setting Up FastPAD Lines



S5307

List of Commands

Table 5-3 shows the full command name and starting page for each line command description.

Table 5-3 Line Commands

Mnemonic	Description	Page
cnfcassw	Configure CAS switching	5-6
cnfln	Configure line (same as cnfcln)	5-8
cnfrsrc	Configure resources	5-16
dnln	Down line (same as dncln)	5-51
dsplncnf	Display line configuration (same as dspclncnf)	5-22
dsplns	Display lines (same as dspclns)	5-27
dsptsmap	Display time slot map	5-29
prtlns	Print circuit lines (same as prtclns)	5-31
upln	Up line (same as upcln)	5-31

cnfcassw

Configures a UVM to convert channel associated signaling (CAS) and dual-tone multi-frequency (DTMF) tones to common channel signaling (CCS) call control messages. This conversion is necessary for voice networks in which a Voice Network Switch (VNS) uses SVCs to route calls from a CAS-based PBX through a WAN. Model B or later firmware on the UVM is necessary.

Before you can execute **cnfcassw**, note the following:

- The line to which you apply **cnfcassw** must be up.
- If any connections exist on the line, you cannot change the **cnfcassw** parameters. However, you can execute the command to see the current parameters in the **cnfcassw** display.
- You cannot configure a line for both CAS-switching and pass-through.
- With CAS-switching on a UVM that has Y-cable redundancy, the call state of each connection is lost in the event of a switch-over.

Full Name

configure CAS switching

Syntax

```
cnfcassw <line> <mode> <CCS type> <CAS type> <conn type> <country code>
<interdigit timeout> <tone level> <DTMF duration> <idle pattern> <parameters 6–18>
```

Note For the initial implementation of CAS switching, you should specify only port 1 for the *line* parameter (where *line* has the format *slot.port*) and select “PBX-end” for *mode*.

Related Commands

dspln, dsplncf

Attributes

Privilege	1–2
Jobs	No
Log	Yes
Node	IGX
Lock	Yes

Example 1

```
cnfcassw 5.1
```

Description

Configure port 1 of the UVM in slot 5 to support CAS switching.

System Response

```

sw175          TN      SuperUser      IGX 16      9.1 Sep. 17 1997 06:11 PST

Line 5.1 CAS Switching Parameters
=> CASSW mode   [OFF]                      Parm 11      [00] (H)
    CCS Type    [ 1] (D)          Parm 12      [00] (H)
    CAS Type    [ 1] (D)          Parm 13      [00] (H)
    Conn Type   [a32 ]          Parm 14      [00] (H)
    Country code [00] (H)        Parm 15      [00] (H)
    Interdigit TO [05] (H)       Parm 16      [00] (H)
    Tone level   [00] (H)        Parm 17      [00] (H)
    DTMF duration [0C] (H)       Parm 18      [00] (H)
    Idle pattern [54] (H)
    Parm 6      [00] (H)
    Parm 7      [00] (H)
    Parm 8      [00] (H)
    Parm 9      [00] (H)
    Parm 10     [00] (H)

This Command: cnfcassw 5.1

Enter mode: Pbx/Server/Off (o):
    
```

Table 5-4 cnfcassw-Parameters

Parameter	Description	Default
line	Specifies the line in the format <i>slot.port</i> . The line must be up before you can execute <i>cnfcassw</i> .	
mode	Possible entries are “p” for PBX-end, “s” for server-end, or “o” for off. The applications are as follows: <ul style="list-style-type: none"> • PBX-end applies to a UVM connected to a PBX. Specify PBX-end mode if you plan to add the signaling channel (using addcon) at the UVM connected to the PBX (rather than the CVM or UVM connected to the VNS). • Server-end applies to a UVM connected to the VNS. Specify Server if you plan to add the signaling channel (using addcon) at the UVM connected to the VNS (rather than the PBX). • Off means the UVM is not in CAS-switching mode. 	off
CCS type	The range of entries 1–4. A 1 selects Q.SIG.	1
CAS type	The range is 1–32. A 1 specifies AB signaling for 2-wire E&M line.	1
connection type	Specifies the type of voice connection. Valid entries are a32 and a24.	a32
country code	The range is 0–0xFF. A 0, for example is the U.S.	0
interdigit timeout	The range is 0–0xFF, where each hexadecimal value you enter is a multiplier of 50 millisecond increments.	05, which results in 250 ms.
tone level	Specifies the dB level of the DTMF below 0 dBm. The range is 0–0xFF.	00 for 0 dB
DTMF duration	Specifies the DTMF on/off duration. The range is 0–0xFF, and the value you enter is multiplied by 5 millisecond increments.	0C, which results in 60 ms on then 60 ms off.
idle pattern	Specifies the data pattern for the data channel. The range is 0–0xFF.	7F for T1, 54 for E1 line
parms 6–19	Parameters 6-18 are reserved for future use.	00

cnfln

Configures a line to be compatible with the device to which it connects. The **cnfln** command applies to voice, data, frame relay, and ATM lines. See Table 5-2 for a list of the front and matching back cards. Because of the variety of line types and characteristics, the parameters section of this description has three tables to describe the parameters. The system automatically presents the correct options on the command line for each line type. If a parameter is not applicable to a card type, the system displays the parameter in half-tone or the value field of that parameter with dashed lines. Table 5-5 describes the parameters for voice, data, and frame relay parameters. Table 5-6 describes the parameters for the ATM Line Module (ALM/A). Table 5-7 describes the parameters for the ASI line card (BPX node). Table 5-8 describes the ATM parameters for the UXM card (IGX node).

For an ALM/A, the **cnfln** command lets you configure the receive rate and header type and enable payload scrambling. For more details on the features and configurable parameters of the ALM/A, refer to the *Cisco IGX 8400 Series Reference* and the *Cisco IGX 8400 Series Installation* manuals. Note that, although the **cnfln** display shows the transmit rate, you cannot configure it because the ALM/A transmit rate is always the maximum line rate.

Note The **cnfln** command is the same as **cnfcln**.

Full Name

configure line

Syntax

cnfln <line> <parameters>

Related Commands

dspln, **dsplncnf**, **dsptsmap**

Attributes

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

Example 1

```
cnfln 14
```

Description

Configure voice line 14.

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 09:55 PST

CLN 14 Configuration  T1/24          CDP slot: 13
Loop clock:          --

Line framing:        --
coding:              --
CRC:                 --
recv impedance:     --
E1 signalling:      --
encoding:            --
T1 signalling:      --
cable type:         --
length:              --
56KBS Bit Pos:      --
pct fast modem:     --

Last Command: cnfcln 14

Next Command:
```

Example 2

```
cnfcln 7 n 2
```

Description

Configure a frame relay T1 line for the following options: no loop clock and a receive impedance of 75 ohms.

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 09:55 PST

CLN 14 Configuration  T1/24 FRPslot: 13
Loop clock:          --

Line framing: ESF
coding:              ZCS
CRC:                 --
recv impedance:     --
E1 signalling:      --
encoding:            --
T1 signalling:      --
cable type:         ABAM
length:              0-133 ft.
56KBS Bit Pos:      --
pct fast modem:     --

Last Command: cnfcln 7 n 2

Next Command:
```

Example 3

```
cnfln 4.2 7F 0 N
```

Description

Configure ASI port 4.2 with an idle code 7F and without payload scrambling.

System Response

```

ca19          VT   SuperUser      BPX 15    9.1    Aug. 23 1997 19:11 GMT

LN  4.2 Configuration T3   [96000 cps]  ASI-T3 slot:4
Loop clock:                --                Idle code:          7F hex

Line framing:              --
coding:                    --
CRC:                       --
recv impedance:           --
E1 signalling:            --
encoding:                  --                cable type:
T1 signalling:            --                length:             0-450 ft.
                                           HCS Masking:       Yes
                                           Payload Scramble:  No

56KBS Bit Pos:           --
pct fast modem:          --

```

```
Last Command: cnfln 4.2 7F 0 N
```

```
Next Command:
```

Example 4

```
cnfln 12
```

Description

Configure the ALM/A in slot 12.

System Response

```
reach          TN      SuperUser      IGX 16      9.1 July 22 1997 12:39 PDT

LN 12 Config   T3/3   [452 cps]    ALM slot: 12
Transmit Line Rate: 96000 cps
Receive Line Rate: 452 cps
Header Type:    VCC
Payload Scramble Yes
```

Last Command: cnfln 12 452 vcc y

Next Command:

Example 5

```
cnfln 10.1 N D4 ZCS AB 4 20 _
```

Description

Configure line 1 on the UVM in slot 10 with no loop clock, D4 framing, Zero Code Suppression coding, AB T1 signalling, and 20% expected channel utilization by a high speed modem.

System Response

```
sw176          TN      SuperUser      IGX 16      9.1.0      Sep. 15 1997 13:37 PST

LN 10.1 Config      T1/24          UVM slot: 10
Loop clock:         No

Line framing:       D4          cnfg:          External
coding:            ZCS          slot.line:    --
CRC:               --          CAS-switching: PBX-end
recv impedance:    --          SVC-Caching   : On
E1/J1 signalling:  --
encoding:          u-law
T1 signalling:     AB
cable type:        ABAM
length:            0-133 ft.
56KBS Bit Pos:    msb
pct fast modem:    20
```

This Command: cnfln 10.1 N D4 ZCS AB 4 20 _

Turn on SVC-Caching (Y):

This release has added a prompt for configuration of a UVM line for SVC Caching. It is also supported on CVM lines on the IPX. The SVC Caching feature speeds up call setup for most VNS controlled calls by avoiding some of the call setup/tear-down operations when a call originates or terminates.

Refer to the *VNS Installation and Configuration Manual* for more information on SVC Caching.

Table 5-5 cnfln–Voice, Frame Relay, or Data Parameters

Parameter	Description	Default																											
slot or slot.line	Specifies the line. If the back card has one line connector and cable, enter the slot number. If the card has more than one physical line, include a line number. If the card is a UVM, however, enter just the slot number.																												
loop clock	Enables the transmit and receive control leads to use the same clock. Format for the parameter is Y or N	N																											
line framing	Configures T1 line framing to be D4 or ESF. Note that UFM-C series is ESF only.	D4 (ESF on UFM/FRM)																											
line coding	Configures T1 and E1 coding: T1: ZCS B8ZS AMI E1:HDB3 ZCS	ZCS B8ZS for FRM HDB3																											
line CRC on	Enables CRC-4 detection for E1 lines. Use either Y or N	N																											
E1 recv impedance	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Impedance</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>75 ohm</td> <td>unbalanced</td> </tr> <tr> <td>2</td> <td>75 ohm</td> <td>balanced</td> </tr> <tr> <td>3</td> <td>120 ohm</td> <td>balanced</td> </tr> <tr> <td>4</td> <td>0–133 ft</td> <td>ABAM cable</td> </tr> <tr> <td>5</td> <td>133–266 ft</td> <td>ABAM cable</td> </tr> <tr> <td>6</td> <td>266–399 ft</td> <td>ABAM cable</td> </tr> <tr> <td>7</td> <td>399–533 ft</td> <td>ABAM cable</td> </tr> </tbody> </table>	Parameter	Impedance	Description	1	75 ohm	unbalanced	2	75 ohm	balanced	3	120 ohm	balanced	4	0–133 ft	ABAM cable	5	133–266 ft	ABAM cable	6	266–399 ft	ABAM cable	7	399–533 ft	ABAM cable	1			
Parameter	Impedance	Description																											
1	75 ohm	unbalanced																											
2	75 ohm	balanced																											
3	120 ohm	balanced																											
4	0–133 ft	ABAM cable																											
5	133–266 ft	ABAM cable																											
6	266–399 ft	ABAM cable																											
7	399–533 ft	ABAM cable																											
signaling	E1: Common channel signaling (CCS) or ABCD signaling bits with channel associated signaling (CAS) T1: ABCD or ABAB (with ESF line framing) or AB (with D4 line framing); CCS is available in timeslot 24 if applicable PBXs need it.	CAS AB																											
encoding	A-law μ -law	depends on the back card																											
cable type/length	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Voice Circuits</th> <th>Frame Relay Circuits</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0-220 ft. MAT cable</td> <td>CSU Network Interface</td> </tr> <tr> <td>2</td> <td>220-440 ft MAT cable</td> <td>0–133 ft ABAM cable</td> </tr> <tr> <td>3</td> <td>440-655 ft MAT cable</td> <td>133–266 ft ABAM cable</td> </tr> <tr> <td>4</td> <td>0-133 ft ABAM cable</td> <td>266–399 ft ABAM cable</td> </tr> <tr> <td>5</td> <td>133-266 ft ABAM cable</td> <td>399–533 ft ABAM cable</td> </tr> <tr> <td>6</td> <td>266-399 ft ABAM cable</td> <td>533–655 ft ABAM cable</td> </tr> <tr> <td>7</td> <td>399-533 ft</td> <td>not used</td> </tr> <tr> <td>8</td> <td>533-655 ft</td> <td>not used</td> </tr> </tbody> </table>	Parameter	Voice Circuits	Frame Relay Circuits	1	0-220 ft. MAT cable	CSU Network Interface	2	220-440 ft MAT cable	0–133 ft ABAM cable	3	440-655 ft MAT cable	133–266 ft ABAM cable	4	0-133 ft ABAM cable	266–399 ft ABAM cable	5	133-266 ft ABAM cable	399–533 ft ABAM cable	6	266-399 ft ABAM cable	533–655 ft ABAM cable	7	399-533 ft	not used	8	533-655 ft	not used	4
Parameter	Voice Circuits	Frame Relay Circuits																											
1	0-220 ft. MAT cable	CSU Network Interface																											
2	220-440 ft MAT cable	0–133 ft ABAM cable																											
3	440-655 ft MAT cable	133–266 ft ABAM cable																											
4	0-133 ft ABAM cable	266–399 ft ABAM cable																											
5	133-266 ft ABAM cable	399–533 ft ABAM cable																											
6	266-399 ft ABAM cable	533–655 ft ABAM cable																											
7	399-533 ft	not used																											
8	533-655 ft	not used																											

Parameter	Description	Default
56kbs bit stuffing	most significant byte (msb) least significant byte (lsb)	msb
pct fast modem	Expected ADPCM fast connections (range 0-100). High speed modems preclude the use of ADPCM. Consequently, channel load requirements increase over that required for a voice channel. The pct fast modem parameters specify the expected channel utilization (%) by a high speed modem.	20

Table 5-6 cnfln-ATM (ALM/A) Parameters

Parameter	Description
line	Identifies the line. The line is the slot number of the ALM/A.
receive rate	Specifies the receive rate for the line. The range for a T3 line is 150 cells per second (cps) through 96000 cps. For an E3 line, the range is 150 cps-96000 cps.
header type	The header type is either VCC or VPC. The default is VCC. Refer to the IGX-related documentation for an explanation of the header type on the ALM/A.
payload scramble	Enables or disables payload scramble. The default is No.

Table 5-7 cnfln-ATM (ASI) Parameters

Parameter	Description																								
line number	Specifies the ASI line to configure																								
line options	Specifies the ATM line options:																								
	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> <th>Options</th> <th>Default</th> </tr> </thead> <tbody> <tr> <td>Loop clock</td> <td>Enable loop clocking</td> <td>Yes/No</td> <td>No</td> </tr> <tr> <td>Idle Code</td> <td>Hex data placed in unused payload of cells.</td> <td>0 - FF (hex)</td> <td>7F</td> </tr> <tr> <td>Cable Type/Length</td> <td>Length and type of cable used for trunk.</td> <td>1 = 0 - 225 2 = >225</td> <td>1</td> </tr> <tr> <td>HCS Masking</td> <td>Masking of cell header checksum to disable error checking.</td> <td>Yes No</td> <td>Yes</td> </tr> <tr> <td>Payload Scramble</td> <td>Whether or not to scramble (randomize) the cell payload data. Note: for E3, this must always be set to Yes.</td> <td>Yes No</td> <td>No</td> </tr> </tbody> </table>	Parameter	Description	Options	Default	Loop clock	Enable loop clocking	Yes/No	No	Idle Code	Hex data placed in unused payload of cells.	0 - FF (hex)	7F	Cable Type/Length	Length and type of cable used for trunk.	1 = 0 - 225 2 = >225	1	HCS Masking	Masking of cell header checksum to disable error checking.	Yes No	Yes	Payload Scramble	Whether or not to scramble (randomize) the cell payload data. Note: for E3, this must always be set to Yes.	Yes No	No
Parameter	Description	Options	Default																						
Loop clock	Enable loop clocking	Yes/No	No																						
Idle Code	Hex data placed in unused payload of cells.	0 - FF (hex)	7F																						
Cable Type/Length	Length and type of cable used for trunk.	1 = 0 - 225 2 = >225	1																						
HCS Masking	Masking of cell header checksum to disable error checking.	Yes No	Yes																						
Payload Scramble	Whether or not to scramble (randomize) the cell payload data. Note: for E3, this must always be set to Yes.	Yes No	No																						

Table 5-8 cnfln–ATM (UXM) Parameters

Parameter	Description			
slot.line	Specifies which line on which slot to configure			
line options	Specifies the ATM line options:			
	Parameter	Description	Options	Default
	Loop clock	Enable loop clocking	Yes/No	No
	Idle Code	Hex data placed in unused payload of cells.	0 - FF (hex)	7F
	HCS Masking	Masking of cell header checksum to disable error checking.	Yes No	Yes
	Payload Scramble	Whether or not to scramble (randomize) the cell payload data. Note: for E3, this must always be set to Yes.	Yes No	Yes
	Frame Scramble	Whether or not to scramble (randomize) the frame data. Note: for E3, this must always be set to Yes.	Yes No	No
	Cell Framing	Choose the cell framing format. Select either STS-3C (SONET) or STM-1 (SDH).	STS-3C STM-1 PLCP HEC	STS-3C for OC3 PLCP for T3 HEC for E3

cnfrsrc

Use the **cnfrsrc** command to partition resources for AutoRoute PVCs and VSI-Tag Switching.

Full Name

Configure resource

Syntax

cnfrsrc <slot number>.<port number>

Related Commands

dsprsrc

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX
Lock	No

Example

```
cnfrsrc 13.1
```

Description

Partition resources on the OC3 trunk on port 1 of slot 13 on the BPX to support a service such as Tag Switching (or Auto Route PVCs or PNNI SVCs).

System Response

```

n4          TN      SuperUser      BPX 15      9.1      Apr. 4 1998 16:40 PST
Port/Trunk : 4.1
Maximum PVC LCNS:          256      Maximum PVC Bandwidth:26000
Min Lcn(1) : 0 Min Lcn(2) : 0
Partition 1
Partition State :          Enabled
Minimum VSI LCNS:          512
Maximum VSI LCNS:          7048
Start VSI VPI:             2
End VSI VPI :              15
Minimum VSI Bandwidth :    26000      Maximum VSI Bandwidth :      100000

Last Command: cnfrsrc 4.1 256 26000 1 e 512 7048 2 15 26000 100000

Next Command:
    
```

Table 5-9 cnfrsrc-Parameters

Parameter	Description
slot.port	Specifies the BXM card slot and port number.
Maximum PVC Channels	<p>The maximum number of LCNs allocated for AutoRoute PVCs for this port. The range is 1 to 256. 256 is the default. For trunks, there are additional LCNs allocated for AutoRoute that are not configurable.</p> <p>You can use the dspecd <slot> command to display the maximum number of LCNs configurable by using the cnfrsrc command for the given port. For trunks, “configurable LCNs” represent the LCNs remaining after the BCC has subtracted the “additional LCNs” needed.</p> <p>For a port card, a larger number is shown, as compared with a trunk card.</p> <p>Setting this field to “0” would enable configuring all of the configurable LCNs to the VSI.</p> <p>Note that you must specify a value greater than 0 for the Maximum PVC Channels, Maximum PVC Bandwidth, and Maximum VSI LCNs parameters. Otherwise, you will not be able to create more than two PVCs on a BXM card. Also, if these parameters do not have values greater than 0, you will be unable to change the connection channel amount when you configure the BXM trunk using cnfrtk.</p>
Maximum PVC Bandwidth	<p>Specifies the maximum bandwidth of the port allocated for AutoRoute use. The range is 0 to 352207. 0 is the default.</p> <p>Note that you must specify a value greater than 0 for the Maximum PVC Channels, Maximum PVC Bandwidth, and Maximum VSI LCNs parameters. Otherwise, you will not be able to create more than two PVCs on a BXM card. Also, if these parameters do not have values greater than 0, you will be unable to change the connection channel amount when you configure the BXM trunk using cnfrtk.</p>
Configure Partition	Answer yes or no to begin configuring resources for the partition.
Partition ID	Specifies the ID number of the partition. The range is 0 to 255. 0 is the default. Always use 0 in Release 9.1.
Enable Partition	Answer yes or no to enable your configured partition.

Parameter	Description
Minimum VSI LCNs	<p>The minimum number of LCNs guaranteed for this partition. The range is 1 to 256. 0 is the default. The VSI controller guarantees at least this many connection endpoints in the partition, provided there are sufficient free LCNs in the common pool to satisfy the request at the time the partition is added. When a new partition is added or the value is increased, it may be that existing connections have depleted the common pool so that there are not enough free LCNs to satisfy the request. The BXM gives priority to the request when LCNs are freed. The net effect is that the partition may not receive all the guaranteed LCNs (min LCNs) until other LCNs are returned to the common pool.</p> <p>You may not increase this value dynamically. However, this may cause the “deficit” condition described above.</p> <p>The command line interface warns the user when the action is invalid, except for the “deficit” condition.</p> <p>To avoid this deficit condition, which could occur with maximum LCN usage by a partition or partitions, it is recommended that all partitions be configured ahead of time before adding connections. Also, it is recommended that all partitions be configured before adding a VSI controller using the addshelf command.</p>
Maximum VSI LCNs	<p>The total number of LCNs the partition is allowed for setting up connections. The minimum VSI LCNs is included in this calculation. If maximum LCNs equals minimum LCNs, then the maximum VSI LCNs are guaranteed for this partition.</p> <p>Otherwise, (max - min) LCNs are allocated from the common pool on a FIFO basis.</p> <p>If the common pool is exhausted, new connection setup requests will be rejected for the partition, even though the maximum LCNs has not been reached.</p> <p>You may increase this value dynamically when there are enough unallocated LCNs in the port group to satisfy the increase.</p> <p>You may not decrease the value dynamically. All partitions in the same port group must be deleted first and reconfigured in order to reduce this value.</p> <p>Different types of BXM cards support different maximum values. If you enter a value greater than the allowed maximum, a message is displayed with the allowable maximum value.</p> <p>Note that you must specify a value greater than 0 for the Maximum VSI LCNs, Maximum PVC Channels, and Maximum PVC Bandwidth parameters. Otherwise, you will not be able to create more than two PVCs on a BXM card. Also, if these parameters do not have values greater than 0, you will be unable to change the connection channel amount when you configure the BXM trunk using cnfrk.</p>
Start VSI VPI	<p>By default the TSC (for example, the 7200 or 7500 series router) will use either a starting VSI VPI of 1 or 2 for tag switching, whichever is available. If both are available, a starting VSI VPI of 1 is used. The VPI range should be 2-15 on a BPX 8260 VSI. The VSI range for tag switching on the BPX 8620 is configured as a VSI partition, usually VSI partition number 1. VSI VPI 1 is reserved for AutoRoute PVCs, so the VSI partition for tag switching should start at VPI 2. If VPI 2 is not to be used, the tag switching VPI interface configuration command can be used on the TSC to override the defaults.</p> <p>The range is 2 to 4095. Always set to 2 for trunks.</p>
End VSI VPI	<p>Two VPIs are sufficient for Release 9.1, although it may be advisable to reserve a larger range of VPIs for later expansion, for example, VPIs 2-15.</p> <p>The range is 2 to 4095.</p>

Parameter	Description
Minimum VSI Bandwidth	The minimum port bandwidth allocated to this partition in cells/sec. (Multiply by 400 based on 55 bytes per ATM cell to get approximate bits/sec.) The range is 0 to 352207. 0 is the default.
Maximum VSI Bandwidth	The maximum port bandwidth allocated to this partition. This value is used for VSI QBIN bandwidth scaling. The range is 0 to 352207. 0 is the default.

dnln

Deactivates (“downs”) a line. After **dnln** executes, the line no longer generates framing, and no statistics are gathered. Before you deactivate a line, use **delcon** to remove all connections on the line and use **dnport** to deactivate the port associated with the line.

Note The **dnln** command is the same as the **dncln** command.

Full Name

Down line

Syntax

dnln <line number>

Related Commands

upcln, dsplns, dsptsmap

Attributes

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

Example 1

```
dnln 12
```

Description

Deactivate line 12.

Table 5-10 dnln-Parameters

Parameter	Description
line number	Specifies the line. If the back card has one line, enter the slot number. If the card has more than one line, include a line number.

Example 2

```
dnln 3.12
```

Description 2

Deactivate line 12 on slot 3.

Table 5-11 dnln-Parameters for UXM

Parameter	Description
slot.line number	Specifies the slot and line to down on the UXM.

dsplncnf

Displays the configuration of a line. Table 5-12 shows all possible parameters in the display. The fields that actually contain data depend on the type of line.

Table 5-12 Possible Line Configuration Parameters

Screen Item	Description	Options
LN configuration	Line type and the number of channels.	T1 E1
Loop clock	Specifies whether the receive clock is looped back to the transmit clock.	Y N
Line framing	Identifies the type of line framing used by the circuit line.	DS4 for T1 ESF for T1 PLCP for T3/E3 HEC for T3/E3 STS-SC for OC3 STM-1 for OC3
Line coding	Identifies the line coding used by the circuit line.	E1: HDB3, AMI T1: ZCS, B8ZS, AMI
CRC	Specifies the CRC checking on E1 lines	Y N
recv impedance	Nominal impedance for the receive line.	75 ohms balanced or unbalanced 120 ohms balanced
E1 signaling	Identifies the signaling type used for E1.	CCS or ABCD with CAS
encoding	Specifies the voice encoding scheme	μlaw Alaw
T1 signaling	Identifies the signaling type used for T1	ABCD or ABAB (with ESF line framing) or AB (with D4 line framing); CCS is available in timeslot 24 if applicable PBXs need it.
56 kbps Bit Pos:	Position in word for bit stuffing on 56 kbs data channels.	MSB or LSB
Pct fast modem		
Cable type	Specifies the T1 or E1 cable type (used for equalization)	MAT ABAM
Cable length	Specifies the T1 or E1 cable length in feet to the CSU or digital cross-connect.	0–220 220–440 440–655 0–133 133–262 262–393 393–524 524–655 T3/E3 = 0-255 ft. greater than 255 ft.
Cnfg	Applies to the UVM: cnfg shows the mode of an individual UVM port. The <i>slot.line</i> identifies the line.	External, Passing, Blocked, or Inserting See the UVM documentation in the <i>Cisco IGX 8400 Series Reference</i> for a description of these modes.
Transmit Line Rate	Applies to ATM line cards: the display shows the transmit line rate (the direction is away from the node).	The value is always the maximum for the line and is in cells per second (cps): 96000 cps for T3, 80000 cps for E3, or 353208 cps for OC3.

Screen Item	Description	Options
Receive Line Rate	Applies to ATM line cards: the display shows the user-configured receive line rate (the direction is towards the node).	The value is in cells per second (cps). The range is 150–9600 cps for T3, 150–80000 cps for E3, or 353208 cps for OC3.
Header Type	Applies to ATM cards: the display shows the user-specified header type.	The header type is VCC or VPC.
Payload Scramble	Applies to ATM cards: the display shows whether payload scramble is on.	The display shows “Yes” or “No.”

Full Name

display line configuration

Syntax

dsplncnf <line number>

Related Commands

cnfln (obsolete name: **cnfcln**)

Attributes

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

Example 1

```
dsplncnf 5.1
```

Description

Displays configuration for line 1 of the UVM in slot 5. The “cnfg” field shows “External,” so all DS0s terminate on line 1. Also, CAS switching is off, and SVC caching is on.

System Response

```
sw175          TN      SuperUser      IGX 16      9.1 Sep. 17 1997 23:28 PST

LN   5.1 Config      E1/30          UVM slot: 5
Loop clock:      No

Line framing:    On          cnfg:          External
```

```

coding:          HDB3                      slot.line:  --
CRC:            No                         CAS-Switching: Off
recv impedance: 75 ohm + gnd              SVC-Caching  :  On

E1/J1 signalling: CAS
encoding:       A-LAW
T1 signalling:  --
cable type:    --
length:        --
56KBS Bit Pos: msb
pct fast modem: 20

Last Command: dsplncnf 5.1

Next Command:

```

Example 2

```
dsplncnf 13
```

Description

Display the configuration of the line card in slot 13. The card in slot 13 is an ALM/A.

System Response

```

swl42          TN      SuperUser          IGX 16      9.1 July 31 1997 12:01 PDT

LN 13 Config   T3/1    [150  cps]    ALM slot: 13
Transmit Line Rate: 96000 cps
Receive Line Rate: 150 cps
Header Type:    VCC
Payload Scramble: No

```

```
Last Command: dsplncnf 13
```

```
Next Command:
```

Example 3

```
dsplncnf 12.1
```

Description

Display the line configuration for 12.1. The card in slot 12 is an ASI in a BPX node.

System Response

```
ca20          LAN   SuperUser      BPX 15    9.1   Aug. 23 1997 10:35 PST

LN 12.1 Configuration T3   [96000 cps]   ASI-T3 slot:12
Loop clock:      --                Idle code:      7F hex

Line framing:    --
coding:          --
CRC:             --
recv impedance: --
E1 signalling:  --
encoding:        --
T1 signalling:   --                cable type:
                                           length:      0-450 ft.
HCS Masking:     Yes
Payload Scramble: No

56KBS Bit Pos:  --
pct fast modem: --
```

Last Command: dsplncnf 12.1

Next Command:

Example 4

dsplncnf 7.1

Description

Displays configuration for line 1 of the UXM OC3 card set in slot 7.

System Response

```
sw224         TN     SuperUser      IGX 16    9.0.n2   Aug. 27 1997 16:09 GMT

LN 7.1 Config   OC3                UXM slot: 7
Loop clock:     No
Idle code:      7F hex
HCS Masking:    Yes
Payload Scramble: Yes
Frame Scramble: Yes
Cell Framing:   STS-3C
```

Last Command: dsplncnf 7.1

Table 5-13 dspIncnf-Parameters

Parameter	Description
line number	Identifies the line in the format <i>slot</i> or <i>slot.line</i> . If the back card has one line connector and cable, enter the slot number. If the card has more than one physical line, such as a UXM, enter a slot and line number. In the case of a UVM, however, enter just the slot number.

dsp1ns

Displays basic configuration and status information for all the lines on the node. The information includes the line number, the type of line, and the line alarm status. The line type shows whether the line is J1, T3, E3, T1, E1, or OC3 and shows the number of configured DS0s. Line alarm status categories include:

- Clear—Line OK Alarm Information Signal
- Loss of Signal Remote Out of Frame
- Out of Frame Remote Out of Packet Frame
- Minor—Bad clock source Loss of Multiframe

Full Name
display lines

Note The **dspc1ns** command is the same as the **dsp1ns** command.

Syntax
dspc1ns

Related Commands
dncln, dsptrks, upcln

Attributes

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

Example
dsp1ns

Description
Display circuit lines on the node.

System Response

sw109 VT SuperUser IGX 16 9.1 Aug. 20 1997 18:40 PST

Line	Type	Current Line Alarm Status
3	T1/24	Clear - OK
5.1	E1/30	Clear - OK
5.2	E1/30	Clear - OK
5.3	E1/30	Clear - OK
5.7	E1/30	Clear - OK
5.8	E1/30	Clear - OK
7.1	T1/24	Clear - OK
11	E1/30	Clear - OK

Last Command: dsplns

Next Command:

dsptsmap

Use the **dsptsmap** command to display the channel to timeslot mapping usage information on a UVM card on an IGX node or a CDP/CVM card on an IPX node. The **dsptsmap** command is for use with the SVC caching feature which speeds up call setup for most VNS controlled calls. The SVC caching feature avoids some of the call setup/tear-down operations associated with **addcon** and **delcon** as a call originates or terminates. The SVC caching feature reduces the connect time for many switch calls over a busy network.

To use the **dsptsmap** command, the line must have SVC caching enabled on it. You can find out if a channel is disabled by using the **dsptsmap** command.

The **cnfln** command is used to configure the SVC caching parameter setting.

The **dsprcons** command is used to view disabled connections provided the SVC has not been deleted.

The **dsplncnf** command will show the value (On/Off) of the SVC caching mode feature.

Refer to the *VNS Installation and Configuration Manual* for more information on SVC caching.

Full Name

Display the channel to timeslot mapping usage for a UVM on an IGX node, or a CVM line on the IPX.

Note The **dsplncnf** command is the same as the **dsplns** command.

Syntax

dsptsmap <line_number>[update_interval]

Related Commands

cnfuparm, cnfln, cnfupcln, dncln, dsprtrks, dspln, dsplncnf

Attributes

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

Example

```
dsptsmap 7.2
```

Description

Display channel to timeslot mapping for a specified line.

Table 5-14 dsptsmap—Parameters

Parameter	Description
line_number	<i>slot.line</i> for UVM or line for CVM/CDP
interval_number	Interval in seconds between screen updates. The default value is controlled by “Screen Update Time” in the cnfuiparm command.

Example

```
dsptsmap 9 1
```

Description

Enabled channels are shown on the screen underlined and in reverse video. Disabled (cached) channels are shown with the channel number underlined and in reverse video, while the timeslot is shown in normal video. Channels that have no connection are shown in normal video for both channel number and timeslot.

For example:

- Channel 1 does not have a connection.
- Channel 2 is an enabled connection carrying traffic.
- Channel 3 is a disabled connection.

The *line_number* parameter is specified in *slot.line* format for UVM and *line* format for CDP/CVM.

Use the optional *update_interval* parameter to control how often the screen gets updated. If no value is entered through the CLI, the value of the “Screen Update Time” parameter set using in the **cnfuiparm** command is used.

System Response

```
sw176          TRM   StrataCom          IGX 16      9.1.0      Sep. 5 1997 11:00 PST
```

```
Line 7.2 Channel to Timeslot Map
```

Chan	TS	Chan	TS	Chan	TS	Chan	TS
<u>1</u>	1	<u>9</u>	14	<u>17</u>	17		
<u>2</u>	2	10	12	<u>18</u>	5		
<u>3</u>	22	11	18	19	19		
4	5	<u>12</u>	10	<u>20</u>	20		
<u>5</u>	11	13	13	<u>21</u>	21		
6	6	14	9	<u>22</u>	3		
7	7	15	15	23	23		
<u>8</u>	8	16	9	24	24		

```
This Command: dsptsmap 7.2
```

```
Hit DEL key to quit:
```

prtlns

Prints the current line configuration and line alarm status for a node. This command uses the same syntax, and prints the same information as is displayed using the **dsplns** command. See the **dsplns** command for syntax and output information.

Full Name

print line configuration

Syntax

prtlns

Related Commands

dsplns

Attributes

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

Example

```
prtlns
```

Description

This command uses the same syntax and prints the same information as is displayed using the **dsplns** command. See the **dsplns** command for syntax and output information.

upln

Activates (ups) a line. Use the **upln** command to make the line available for configuring and to start statistics gathering. You must activate ports at both ends of the line by executing the **upport** command before running **upln**. You must execute **upln** at both ends of the line. Executing **upln** at only one end of the line eventually causes an alarm. Once both ends of the line are active, you can add connections with the **addcon** command or optionally configure the line's signal characteristics for the data you intend for the line. See **cnfln** for information on defining the line characteristics.

A line consists of a cable for transmitting data and the interface circuitry for the line. The cable can be a coaxial wire, fiber optic, or a twisted pair. See Table 5-2 for information on card combinations.

Note If, after upping a BXM line, you get a message telling you to use **cnfrsrc** to configure PVCs, make sure that when configuring resource partitions with **cnfrsrc**, you specify values greater than 0 for the Maximum PVC Channels, Maximum PVC Bandwidth, and Maximum VSI LCNs. Otherwise, you will be unable to create any PVCs on a BXM card. You also will not be able to change the Connection Channels amount with **cnftrk** if these parameters' values are not set to values greater than 0.

Note The **upln** command is the same as **upcln**.

Full Name

Up line

Syntax

upln <line number>

Related Commands

cnfcln, dsplns, dspln, dncln

Attributes

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

Example 1

```
upln 4.2
```

Description

Activate line 4.2. After this command executes, the system displays the status of the line using the same information as **dsplns** displays.

System Response

```

ca19          VT   SuperUser      BPX 15      9.1      Aug. 23 1997 19:08 GMT

Line Type     Current Line Alarm Status
4.1 T3       Clear - OK
4.2 T3       Clear - OK

```

Last Command: upln 4.2

Next Command:

upln-Parameters

Parameter	Description
line number	Identifies the line number in the form <i>slot</i> for a single-line card or <i>slot.port</i> for a card with more than one line.

Example 2

```
upln 3.2
```

Description 2: Upping a Line on a UXM

Activate line 2 on slot 3. After this command executes, the system displays the status of the line using the same information as **dsplns** displays.

Table 5-15 upln-Parameters for UXM

Parameter	Description
slot.line number	Specifies the slot and line to up on the UXM. There can be no more than sixty four (64) lines per node. The upln command will be rejected if all sixty four lines have already been upped.

Voice Connections

The voice commands apply to the setting up, configuring, and statistical reporting for voice connections (including FAX). In addition to the command descriptions, this chapter describes how to add a voice connection, configure card redundancy, and optimize the use of voice activity detection (VAD). A list of the commands that let you modify most characteristics of voice and data connections also appears at the front of the chapter. Use this list as a guideline for building voice service.

Voice connections exist as ports on circuit lines that are supported by either a Channelized Data Module (CDP) in an IPX node or a Channelized Voice Module (CVM) or Universal Voice Module (UVM) in an IGX node. The back card for the CDP or CVM is either a BC-T1, BC-E1, or BC-J1. For the UVM, the back card is either a BC-UVI-2T1EC, a BC-UVI-2J1EC, or BC-UVI-2E1EC.

Setting Up a Voice Connection

The following steps describe how to set up a voice connection:

Step 1 Configure the voice channel at each end of the connection. The associated commands are:

- **upln** Use **upln** to activate the line.
- **cnfcassw** If the UVM must convert CAS/DTMF to CCS signaling for a Voice Network Switch (VNS), use **cnfcassw** to configure the UVM for CAS switching. For CAS switching, the minimum UVM firmware level is B. Note that CAS switching is incompatible with pass-through. Before you use **addcon** to add signaling channels (to *slot.port.24* or *slot.port.16* for T1 or E1, respectively), specify “PBX-end” mode with **cnfcassw**.
- **cnflnpass** For a UVM intended to carry voice traffic with low delay code-excited linear predictive coding (LDCELP) or conjugative algebraic code-excited linear predictive coding (CACELP) per G.729, use **cnflnpass** to configure the UVM lines for the *pass-through* feature. Refer to the *Cisco IGX Reference* for a description of pass-through. Before you can execute **cnflnpass**, you must activate (**upln**) and configure (**cnfln**) the lines. Note that pass-through is incompatible with CAS-switching.
- **cnfchadv** Configures the channel for adaptive voice (ADV). This command enables or disables adaptive voice compression for one or more voice channels. The feature must be configured at both ends of the channel.
- **cnfchdl** Configures a channel’s dial-type. The options are inband, pulse, and user-configured.
- **cnfchec** Configure the echo canceller for the channel. The command enables or disables the echo canceller for a range of voice channel, sets the echo return loss to high or low and enables/disables the tone disabler, convergence, and non-linear processing.
- **cnfchgn** Configures the amount of gain inserted in a voice channel.
- **cnfcond** Configures a conditioning template for the channel.
- **cnfrcvsig** Configures receive signaling for the channel.
- **cnfxmtsiz** Configures transmit signaling for the channel.
- **cnfvchtp** Configures a voice interface type for the channel.
- **cnfchutl** Configures channel utilization (see “Optimizing Traffic Routing and Bandwidth” chapter).
- **addyred** Enables voice channel redundancy.
- **dsplncnf** Use **dsplncnf** to make sure you have correctly configured the line.

Step 2 Add the connections with the **addcon** command. You must complete the appropriate steps at each end using the commands in the preceding list before you add connections.

Configuring Voice Channel Redundancy

You can configure voice cards for redundancy by installing two identical card sets in adjacent slots and connecting them to the CPE through a Y-cable. Configure redundancy by using **addyred**. Note that a switch to a standby UVM that has active CAS-switching causes the loss of all call states.

Using VAD and Configuring Voice Channel Utilization

The bandwidth savings you gain by using VAD are less than optimal if you do not set the utilization of the voice channels to a reasonable value. To configure the utilization, use the **cnfchutl** command.

Summary of Commands

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

Table 6-1 Voice Connection Commands

Command	Full Name	Page
addcon	Add connection	6-4
cnfchadv	Configure channel adaptive voice	6-8
cnfchdl	Configure channel dial type	6-10
cnfchec	Configure channel echo canceller	6-13
cnfchfax	Configure fax modem detection for channels (UVM)	6-16
cnfchgn	Configure channel gain insertion	6-18
cnfcond	Configure conditioning template	6-20
cnflnpass	Configure line pass	6-22
cnfrcvsig	Configure receive signaling	6-24
cnfvchtp	Configure voice channel interface type	6-26
cnfxmtsig	Configure transmit signaling	6-30
delcon	Delete connection	6-32
dspchcnf	Display channel configuration	6-34
dspchdlcnf	Display channel dial type configuration	6-36
dspchec	Display channel echo canceller	6-38
dspecon	Display connection	6-40
dspecond	Display conditioning template	6-42
dspecons	Display connections	6-44
dspeconst	Display connection state	6-47
dspsigqual	Display signal qualifiers	6-49
dspsvcst	Display voice SVC statistics	6-53
prtchcnf	Print channel configuration	6-55
prtchdlcnf	Print dial type configuration	6-56
prtcons	Print connections	6-57

addcon

Establishes the channel connections between nodes in the network. You can add voice connections to any slot that has a CDP, UVM, or CVM. Before you add a connection, determine its compression type.

If you plan for a port on a UVM to carry more than 16 channels with LDCELP or the G.729 version of CACELP, you must have a second, connected UVM and configure the resultant pair of UVMs for pass-through operation. If you attempt to add more than 16 LDCELP or G.729 channels, the system reports any excess connections as being failed connections after **addcon** execution finishes. Furthermore, if you execute **dspcon**, the status display for the excess connections shows “ConnRJ” (connection rejected). Refer to the **cnflnpass** description in this chapter and the UVM description in the *Cisco IGX Reference* for a description of pass-through.

After you have established pass-through for a pair of UVM card sets, the system does not allow duplication of channel numbers when you add connections. For example, if you add 7.1.1-16, the node does not allow you to add 8.1.1-8 if you have linked the UVMs by using **cnflnpass**. Instead, you would add 8.1.17-24.

A UVM with Model B or higher firmware supports CAS switching. Before you can add connections in a network with CAS switching, you must configure the UVM for this feature with the **cnfcassw** command. Note that, for CAS switching, you use **addcon** to add the signaling channels at the near and far end in the format *slot.port.24* on a T1 line and *slot.port.16* on an E1 line. Also, the connection *type* for these signaling channels is “t.” If you specify D-channel compression, the connection type is “td.” See the description of **cnfcassw** in the chapter titled “Setting Up Lines” or, for a more detailed description, the manual titled *Cisco Voice Switching Installation and Operation*.

When adding a range of channels, you do not have to specify the full channel set at the near-end. You may specify only the first channel in the set. For example, to connect channels 13.1-10 at alpha to channels 12.5-14 at beta, you could enter “**addcon** 13.1-10 beta 12.5.” In this example, channel 13.1 is connected to channel 12.5, and channel 13.2 is connected to channel 12.6, and so on.

Connections are added with a default *class of service* (COS). The value of COS is the number of seconds that the node waits before it reroutes the connection after a failure. The COS applies to various types of connections other than voice and therefore is described elsewhere (see the **cnfcos** description in the chapter titled “Optimizing Traffic Routing and Bandwidth.”)

Table 6-2 describes what you enter for the *type* parameter for each rate and compression variable.

Table 6-2 Types of CDP and CVM Operation

Rate	VAD	No VAD	Comment
64 Kbps	v	p	
32 Kbps	c32	a32	
32 Kbps for FAX	c32d	a32d	Specifies 32 Kbps specially optimized for FAX. c32d incorporates Voice Activity Detection (VAD).
24 Kbps ADPCM	c24	a24	
16 Kbps no ZCS	c16z	a16z	For non-ZCS only.
16 Kbps	c16	a16	ZCS is permissible. c16 and a16 use non-standard compression algorithms.

Table 6-3 Types of UVM Operation

Rate	VAD	No VAD	Comment
64 Kbps	v	p, t	Pass-through does not accept t-type connections.
32 Kbps	c32	a32	
24 Kbps ADPCM	c24	a24	
16 Kbps no ZCS	116V	116	For non-ZCS only.
8 Kbps	g729r8v g729ar8v	g7298 g729ar8	The UVM supports two forms of CACELP. Both versions can support VAD (or no VAD). The "a" indicates G.729A. The other version is G.729.

Table 6-4 Types of UVM Connections

p	A p-connection carries 64 Kbps PCM voice and supports A-law or μ -law encoding and conversion, gain adjustment, and signaling.
t	A t-connection carries 64 Kbps clear channel data traffic.
td	A td-connection carries compressed, 16-Kbps signaling between an IGX node and VNS unit.
v	A v-connection is the same as "p" (above) but with VAD.
a32 a24	Specifies ADPCM only. You can specify 32-Kbps or 24-Kbps.
c32 c24	Specifies both ADPCM and VAD. You can specify 32-Kbps or 24-Kbps.
116	LDCELP compression of voice to 16 Kbps.
116v	LDCELP compression of voice to 16 Kbps with VAD.
g729r8	CACELP voice compression at 8 Kbps according to G.729. This type also supports automatic FAX and modem upgrade.
g729r8v	CACELP voice compression at 8 Kbps with VAD according to G.729.
g729ar8	CACELP voice compression at 8 Kbps according to G.729A.
g729ar8v	CACELP voice compression at 8 Kbps with VAD according to G.729A.

The difference between a PCM (p) connection and a transparent (t) or transparent D-compression (td) connection is that the D4 frame signaling bits are identified and processed as signaling information with PCM connections. PCM connections permit gain adjustment to be applied to the connection. Transparent connections treat all bits, including signaling bits, as data bits and disables any gain adjustment conversion that you may have specified.

The *number* in the type field indicates the ADPCM rates in Kbps. The "z" suffix indicates that 00 code level is used. Type a16 or c16 uses only 01, 10, and 11 binary codes to avoid long strings of zeroes. Type a16z and c16z connections use the 00 code and are automatically configured to avoid ZCS lines (*Z).

Full Name

Add connection

Syntax

addcon <local channel> <remote node> <remote channel> <type> [avoid]

Related Commands

delcon, dncon, dspcon, dspscons, cnfcos

Attributes

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

Example 1

```
addcon 7.2 beta 8.2 v
```

Description

Add a “v” type voice connection. This command connects channel 7.2 on node alpha to channel 8.2 on node beta. A prompt appears asking you to confirm the proposed connections.

Connection type is “v,” “class of service” (COS) is “2,” compression is VAD, and ownership is local. For an explanation of COS, see the **cnfcos** description in the chapter titled “Optimizing Traffic Routing and Bandwidth.” Because you are entering the **addcon** command at node alpha, the node alpha is the owner of the connection.

System Response

```
alpha          TRM    YourID:1      IPX 16    9.1    Aug. 16 1997 09:37 PST

  Local      Remote    Remote
  Channel    NodeName  Channel      State  Type    Compression Avoid COS
  7.2        beta     8.2          Ok    v       VAD         L   2
```

```
Last Command: addcon 7.2 beta 8.2 v
```

```
Next Command:
```

Table 6-5 addcon-Parameters

Parameter	Description
local channel	<p>Specifies the local channel or set of channels to add. Right-angle brackets indicate that a range of channels. Channel specification on a UVM has one more parameter than the specification on a CDP or CVM, as follows:</p> <p>For a CDP or CVM, the format for channel specification is <i>slot.chan[-chan]</i>.</p> <p>For a UVM, the format for channel specification is <i>slot.line.chan[-chan]</i>. Refer to the <i>Cisco IGX Reference</i> for a description of the UVM's lines. Note that, if you are using CAS switching with for Model B firmware, <i>line</i> must be "1."</p>
node	<p>Specifies the name of the node at the other end of the connection. For a DAX connection (where channels on a node are connected to channels on the same node), use the local node name.</p>
remote channel	<p>Specifies the remote channel or set of channels to connect. Brackets indicate that a range of channels can be specified. Channel specification on a UVM has one more parameter than the specification on a CDP or CVM. For a CDP or CVM, the format for channel specification is <i>slot.chan[-chan]</i>. For UVM, the format for channel specification is <i>slot.line.chan[-chan]</i>.</p> <p>Access devices such as the Cisco 3800 use the following format for the remote channel specification: <i><slot.port> <access_device_connection_ID></i></p> <p>where <i>slot</i> is the slot number of the FTC or FTM card, <i>port</i> is the port number, and <i>access_device_connection_ID</i> is in the range 1–252.</p>
type	<p>Specifies the voice connection type. Refer to Table 6-2 or Table 6-3 for voice connection types and compression.</p> <p>For connections to an access device such as the Cisco 3810, <i>type</i> can be one of the following: 24-Kbps or 32-Kbps ADPCM, LDCELP, or CACELP.</p>

Table 6-6 addcon-Optional Parameters

Parameter	Description
avoid	<p>Specifies the type of trunk for the connection to avoid. The default is no avoidance. The choices are:</p> <ul style="list-style-type: none"> *s avoid satellite trunks. *t avoid terrestrial trunks. *z avoid trunks using zero code suppression techniques that modify any bit position to prevent long strings of zeros.

cnfchadv

Enables the adaptive voice (ADV) feature for individual channels. ADV must also be enabled at each node that terminates the connection. The channel-specific **cnfchadv** has no effect at nodes that do not support ADV enabled.

If the ADV feature is enabled for a channel with a “c” or “v” connections, VAD is automatically disabled on that channel when trunk bandwidth is available and enabled when trunk bandwidth is needed. If the Adaptive Voice feature is not enabled for a channel with a “c” or “v” connections, VAD is always turned on for that channel. In order for a voice (“c” or “v”) connection to use ADV, both ends must have ADV enabled with the **cnfchadv** command.

Full Name

Configure channel adaptive voice

Syntax

cnfchadv <channel(s)> <y/n>

Related Commands

dspchcnf

Attributes

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

Example 1

```
cnfchadv 14.1 e
```

Description

Enable Adaptive Voice for channel 14.1.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 16 1997 09:43 PST

Channels      %    Adaptive Gain (dB)  Dial      OnHk      Cond
14.1-24      Util Voice   In  Out   Type  Interface Type  A  B  C  D  Crit.
14.1-24      40  Enabled  0    -    Inband Unconfig  ?  ?  -  -  a

```

Last Command: cnfchadv 14.1 e

Next Command:

Table 6-7 cnfchadv-Parameters

Parameter	Description
channel	Specifies the channel or range of channels over which you specify Adaptive Voice.
e	Enables ADV (default).
d	Disables ADV.

cnfchdl

Configures the dial type for a channel or set of channels. The dial type may be inband, pulse, or user-configured. The user-configured option allows non-default timing values to be used. The parameters associated with the **cnfchdl** command are timing constants used to ensure that signaling pulses are not distorted in time by transmission through the network.

- Dial type determines the signaling message timing for a connection. Dial type is ignored for DS0 data connections.
- When you add an inband or pulse dial type to a channel, the channel configuration screen appears, showing the designated dial types for each channel.
- When you add a user-configured dial type, a more detailed screen appears, showing the dial type as well as the signaling delay, minimum wink, interdigit times, and playout delay.

If you select inband, the node assumes that the A and B bits are not used for loop-disconnect dialing. Therefore, any change in signaling bit status goes in a packet to the far end of the connection.

If you select pulse, the transmitting node waits (normally 72 ms) after an A or B bit transition for another transition to arrive. If a transition arrives, the new transition goes into the same signaling packet that is sent to the far end of the connection. This step increases the delay of the signaling transition across the network but decreases the amount of trunk bandwidth used for signaling.

If the default timings are not correct for the network, you must configure the options. The dialing type should be set correctly. If a connection-designated pulse is used for inband signaling, a greater than necessary delay across the network results. If a connection-designated inband is used for pulse signaling, the relative timing of signaling transitions may be lost and so distort the pulses.

Full Name

Configure dial type for channels

Syntax

```
cnfchdl <channel(s)> <dial_type> [<sig_delay> <min_wink> <int_dig_time>
<playout delay>]
```

Related Commands

dspchcnf, **dspchdcnf**

Attributes

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

Example 1

```
cnfchdl 14.1 p
```

Description

Configure the dial type of channel 14.1 to pulse.

System Response

```
alpha          TRM   YourID:1          IPX 16      9.1   Aug. 16 1997 09:46 PST

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

Last Command: cnfchdl 14.1 p

Next Command:

Table 6-8 cnfchdl-Parameters

Parameter	Description
channel	Specifies the channel or range of channels over which to configure dial type.
dial type	Specifies the dial type to assign. The three possible dial types are: i inband p pulse u user-configured Inband is the default dial type. If you designate "u" for a user-configured dial type, you are prompted, as applicable, from among the following: sig delay, min wink, interdigit time, and playout delay.

Table 6-9 **cnfchdl–Optional Parameters**

Parameter	Description
signaling delay	Specifies the signaling delay for the user-configured dial type. The range is 12–96 ms. Your entry is rounded to the closest multiple of 1.5 ms.
minimum wink	Specifies the minimum wink to assign to the user-configured dial type. The range is 3–765 ms. Your entry is rounded down to the nearest multiple of 3 ms. This parameter does not apply to CDP, UVM, or CVM channels.
interdigit time	Specifies the interdigit time for the user-configured dial type. The range is 3–765 ms. Your entry is rounded down to the nearest multiple of 3 ms. This parameter does not apply to CDP, UVM, or CVM channels.
playout delay	Specifies the signaling delay assign to the user-configured dial type. The range is 12–96 ms. Your entry is rounded to the closest multiple of 1.5 ms.

cnfchec

Configures the echo canceller and other channel parameters associated with a voice channel. (You cannot configure CAS and data channels using **cnfchec**). The CDP/CVM and UVM have slightly different parameters. Unavailable parameters appear on the screen as a dashed line, so no prompts for these unavailable options appear.

Full Name

Configure channel echo canceller

Syntax

For CDP/CVM

```
cnfchec <chan> <ec> <erl> <td> <convergence> <nlp>
```

For UVM:

```
cnfchec <chan> <ec> <td> <nlp> <bkgd_filter>
```

Related Commands

dspchec

Attributes

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

Example 1

```
cnfchec 7.1 e h e e e
```

Description

Enable and configure the Echo Canceller in channel 7.1 with high echo loss tone disabled, convergence enabled, and non-linear processing enabled. In this example, the card is either a CDP or CVM because the channel is specified with *slot.channel* rather than *slot.line.channel*.

System Response

```
pubsipx1      TN      cisco      IPX 16      9.1      July 27 1997 06:06 PDT

      Echo      Echo Return      Tone      Conver-      Non-Linear Voice
Channels      Cancel      Loss (.1 dBs)      Disabler      gence      Processing Tmplt
7.1          Enabled      High 60          Enabled      Enabled      Enabled      USA
7.2-31      Disabled      High 60          Enabled      Enabled      Enabled      USA
```

Last Command: cnfchec 7.1 e h e e e

Next Command:

Example 2

cnfchec 13.1.1 e

Description

Enable the echo canceller in channel 13.1.1. In this example, the card is a UVM because the channel is specified with *slot.line.channel*. Note the available parameters differ slightly from a CDP/CVM.

System Response

```
sw176      TN      Cisco      IGX 8420      9.1 Aug. 4 1997 13:29 PST

      Echo      Echo Return      Tone      Conver-      Non-Linear Voice Bkgrnd
Channels      Cancel      Loss(.1 dBs)      Disabler      gence      Processing Tmplt Filter
13.1.1-24      Disabled      -          Enabled      -          Enabled      -          Enabled
13.2.1-24      Disabled      -          Enabled      -          Enabled      -          Enabled
```

This Command: cnfchec 13.1.1

Enable or Disable Echo Cancel (e/d)? [d]:

Table 6-10 cnfchec-Parameters

Parameter	Description
channel	Specifies the channel or range of channels. For a CDP or CVM, “channel” has the format <i>slot.channel(s)</i> . For a UVM, “channel” has the format <i>slot.line.channels(s)</i> .
echo canceller	Enable or disable the echo canceller. An “e” enables. A “d” disables.
echo return loss	Sets the echo return loss as high/low). An “h” specifies high. An “l” specifies low.
tone disabler	Enables or disables the tone disabler. An “e” enables. A “d” disables.
convergence	Enables or disables convergence. An “e” enables. A “d” disables. Except for test purposes, the normal state for convergence is enabled.
non-linear processing	Enables or disables non-linear processing. An “e” enables. A “d” disables.
bkgd_filter	Enables or disables the background filter.

cnfchfax

Configures a channel on a UVM for either *FAX detection* or *FAX relay*. If you enable FAX detection, the UVM suspends voice compression when it detects a FAX or modem tone on the channel. For the duration of the FAX, transmission takes place at 64 Kbps.

FAX relay is a mechanism for compression the FAX transmission rate across a network to 9.6 Kbps.

To view the current configuration, use the **dspchcnf** command.

Full Name

Configure FAX modem detection for channels

Syntax

cnfchfax <slot.line> <channel(s)> <e/d>

Related Command

dspchcnf

Attributes

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

Example 1

```
cnfchfax 7.1.1
```

Description

Configure channels 1-24 on line 1 of the UVM in slot 7 to have FAX modem detection.

System Response

```

sw109          VT    Cisco    IGX 8420    9.1 Aug. 20 1997 19:10 PST

                % Adaptive          Gain (dB) Dial  Interface      OnHk  Cond
Channels Util Voice      Fax    In  Out   Type  Type          A  B  C  D Crit
7.1.1-24  40 Enabled Disabled 0    0   Inband 2W E&M      0  X  -  -  a
7.2.1-24  40 Enabled Disabled 0    0   Inband Unconfig  ?  ?  -  -  a

```

Last Command: cnfchfax 7.1.1

Next Command:

Table 6-11 cnfchfax-Parameters

Parameter	Description
slot.line	Specifies the line of the UVM.
channel(s)	Specifies the DS0 or range of DS0s.
e/d	Enable or disable FAX detection.

cnfchgn

Configures the amount of gain inserted by the IPX or IGX node for a given circuit line channel or range of channels. Gain can be configured between +6 dB and -8 dB. The input gain is inserted at the receive side of a voice card and is therefore applied before the signal is packetized by the card. The output gain is inserted at the transmit side of a voice card and is applied after the signal has been depacketized by the card. Gain is meaningless for channel that carry data.

Full Name

Configure gain insertion for channels

Syntax

cnfchgn <channel(s)> <input_gain> <output_gain>

Related Commands

dspehcnf

Attributes

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

Example 1

```
cnfchgn 14.1 -4 2
```

Description

Configure input gain of -4 db and an output gain of +2 dB for channel 1 of circuit line 1.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 16 1997 09:52 PST

Channels      %    Adaptive  Gain (dB)  Dial      OnHk      Cond
Util  Voice   In  Out      Type  Interface Type  A  B  C  D  Crit.
14.1      40   Enabled  -4   -2     User   Unconfig      ?  ?  -  -  a
14.2-24   40   Enabled  0    -2     Inband Unconfig      ?  ?  -  -  a

```

Last Command: cnfchgn 14.1 -4 2

Next Command:

Table 6-12 **cnfchgn-Parameters**

Parameter	Description
channel	Specifies the channel or range of channels.
input_gain	Specifies the gain, in decibels, to assign to the channel. The range is -8 dB to +6 dB.
output_gain	Specifies the gain, in decibels, to assign to the channel. The range is -8 dB to +6 dB.

cnfcond

Creates a conditioning template that specifies the bit patterns to be transmitted for each of the T1 and E1 timeslots and their A, B, C, and D signaling bits while the channel is in the failed state. Its purpose is to prevent the signaling bits from returning to the idle (on-hook) bit pattern during a channel failure and to force a known bit pattern (usually busy). If a connection fails and the template has been specified as the conditioning template for the failed connection, the data parameter in the template is transmitted in the channels timeslot, and the A, B, C, and D bits are processed according to the specified parameters.

A two-character sequence in the id parameter field identifies the template. The 'Data Pattern' field displays the pattern transmitted in the channels timeslot. The 'signaling Pattern' field displays the pattern transmitted in the channel's A, B, C, and D signaling bit positions. Each of the A, B, C, and D signaling bits are specified independently and may be held high or low or toggled to the on-hook condition for a short time then off-hook (the name of this latter action is a *wink*). You can control the timing of the bit-toggling by specifying the duration of winks in increments of 50 ms.

A typical failure response is for the node to:

- 1 Transmit idle characters in the channel's timeslot
- 2 Signal off-hook for a period of 2 seconds
- 3 Return permanently to the on-hook condition.

Full Name

Configure conditioning template

Syntax

```
cnfcond <id> <data> <A bit> <B bit> <C bit> <D bit>
```

Related Commands

cnfvchtp, dspchcnf, dspcond

Attributes

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

Example 1

```
cnfcond 1m 01010100 0(40)/1 1 1 1
```

Description

Configure the conditioning template.

System Response

```
alpha          TRM   YourID:1          IPX 16      9.1      Aug. 16 1997 09:59 PST
```

```
Conditioning criterion lm:
```

```
Data Pattern
01010100 - E1/T1
```

```
Signalling Pattern
A          0(40)/1
B          1
C          1
D          1
```

```
Last Command: cnfcond lm 01010100 0(40)/1 1 1 1
```

```
Next Command:
```

Table 6-13 cnfcond-Parameters

Parameter	Description
id	Specifies the identifier of conditioning template. The identifier may be any two character combination of lowercase letters (a-z) and numeric digits (0-9).
data	Specifies an eight-bit binary string to use instead of the voice in the event the channel fails.
A bit	<p>Specifies the signaling sequence to be transmitted for these bits in the event of a channel failure. You can independently set each of these parameters. Each element in the sequence is expressed as a 1 or 0 (to indicate the logic state of the line) followed by a number in parenthesis to indicate the duration that the state remains on the channel. The duration number is expressed in 50 ms intervals. If you do not enter a duration value, the state remains the same indefinitely.</p> <p>For example, if is set to 1(40); upon a channel failure, the B bit remains in the 1 state for 2 seconds (40 x 50 ms=2 seconds).</p> <p>For another example, <C> set to 0 would cause the C bit to be held permanently at 0 during a failed channel condition because no duration value is present.</p> <p>Note that you can specify a sequence of states by entering several states separated by slash symbols. The maximum number of states in a sequence is 5. For example, you could set <A> to 1(40)/0(20)/1 to vary the duration of the 0 and 1 states.</p>
B bit	
C bit	
D bit	

cnflnpass

Configures a pair of ports so that unprocessed channels go from a *primary* UVM to a *secondary* UVM. The **cnflnpass** command primarily applies to channels that use LDCELP or G.729 CACELP (although pass-through is possible on any type of connection except t-type or td-type). For a description of *pass-through*, refer to the UVM description in the *Cisco IGX Reference*.

To return ports to the non-passing configuration, execute **cnflnpass** with a 0 as the second argument.

Full Name

Configure line pass-through

Syntax

To configure pass-through, enter:

```
cnflnpass <primary line> <secondary line>
```

To remove pass-through from the primary and secondary lines, enter:

```
cnflnpass <primary line> 0
```

Related Commands

dsplncnf

Attributes

Privilege	1-6
Jobs	Yes
Log	Yes
Node	IGX
Lock	Yes

Example 1

```
cnflnpass 13.1 12.1
```

Description

Configure line 13.1 to pass any unsupported channels to line 12.1.

System Response

Upon successful execution of the command, the screen displays the slot and line of the passing channel on the right. The screen also shows other characteristics of the line.

sw176 TN IGX 8420 9.1 Aug. 26 1997 00:18 GMT

```

LN 13.1 Config      E1/30                UVM slot: 13
Loop clock:        No

Line framing:      On                cfg:                Passing
coding:           HDB3              slot.line:         12.1
CRC:              No
recv impedance:   75 ohm + gnd
E1/J1 signalling: CAS
encoding:         A-LAW
T1 signalling:    --
cable type:      --
length:          --
56KBS Bit Pos:   msb
pct fast modem:  20

```

Last Command: cnflnpass 13.1 12.1

Next Command:

Note that, when you remove pass-through by entering a 0 for the secondary line, the screen also still line characteristics but with dashed lines in the column for the secondary (or passing) line.

Table 6-14 **cnflnpass-Parameters**

Parameter	Description
primary line	Specifies the channels that the primary card supports. The format is <i>slot.port</i> .
secondary line	Specifies the channels that the secondary card supports. The format is <i>slot.port</i> .

cnfrcvsig

Configures the receive signaling bits for a voice channel. Channel signaling bit options are t (transparent), 0, 1, or I (invert). If signaling is set to “not used” (-) by **cnfchtp**, the following condition is maintained: A=1, B=1, C=0, D=1.

Full Name

Configure receive signaling

Syntax

cnfrcvsig <channel(s)> <[A/]Conv> <[B/]Conv> <[C/]Conv> <[D/]Conv>

Related Commands

cnfxmtsig, dspsigqual

Attributes

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

Example 1

```
cnfrcvsig 8.1 A/T B/0 C/I D/I
```

Description

Configure channel 8.1 signaling to transparent for the A bit, inhibited for the B bit, inverted for the C and D bits.

System Response

```
beta TRM YourID:1 IPX 32 9.1 Aug. 23 1997 11:36 MST
```

Signalling Qualifiers								
From 8.1	TXAbit	TXBbit	TXCbit	TXDbit	RXAbit	RXBbit	RXCbit	RXDbit
8.1	T	T	T	T	T	0	I	I
8.2-31	T	T	T	T	T	T	T	T

Last Command: cnfrcvsig 8.1 A/T B/0 C/I D/I

Next Command:

Table 6-15 cnfrcvsig-Parameters

Parameter	Description
channel	Specifies the channel or range of channels to receive signaling.

Table 6-16 cnfrcvsig-Optional Parameters

Parameter	Description
A/	Specifies the conversion applied to the A bit. <Conv> can be one of: 1: bit is asserted. 0: bit is inhibited. T: bit is passed transparently. I: bit is inverted.
B/	Specifies the conversion applied to the B bit.
C/	Specifies the conversion applied to the C bit.
D/	Specifies the conversion applies to the D bit.

cnfvchtp

Configures an interface signaling type for a voice channel. Most standard signaling types are maintained by the node, but a custom template may be built by the user. Entering the **cnfvchtp** command without a specific interface number, the system presents you with a list of valid interface types and their associated onhook and conditioning information.

To assign an interface type (and its associated onhook and conditioning information) to the channel or set of channels, enter the number of the desired interface type. As mentioned previously, type “1” requires user configuration. Interface type is ignored for “d” type connections.

Full Name

Configure interface type for voice channels

Syntax

```
cnfvchtp <channel(s)> <type> [<A> <B> <C> <D> <cond_code>]
```

Related Commands

cnfchgn, cnfchdl, dspchcnf

Attributes

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

Example 1

```
cnfvchtp 7.1.1
```

Description

Configure the interface type for channel 7.1.1-24.

System Response

```

sw109          VT    cisco    IGX 8420    9.1 Aug. 20 1997 18:54 PST

CDP Models All                    None          All
UVM Models All                    None          All
                Sample Delay Bkgnd
From 7.1.1 VAD Non-VAD Noise HPF Float Function Loss Detect Delay
7.1.1-24 A8 01 67 ON ON ON ON 64K 5
7.2.1-24 A8 01 67 ON ON ON ON 64K 5

```

This Command: cnfvchparam 7.1.1

Sample delay for VAD connections:

Example 2

```
cnfvchtp 15.5-8 1 X X - - b
```

Description

Configure a user configurable interface type for channel 15.1 to 15.8. The channel configuration screen shows that channels 5-8 of circuit line 15 now has a user-configured interface type with an A-bit on-hook value of "X", a B-bit on-hook value of "X", an C-bit on-hook value of not used, D-bit on-hook value of not used, and conditioning template b.

Table 6-17 cnfvchtp-Parameters

Parameter	Description
channel	Specifies the channel or range of channels for the interface type configuration. For a CVM or CDP, the format is <i>slot.channel[-channel]</i> . For a UVM, the format for channel is <i>slot.line.channel[-channel]</i> .

Parameter	Description
interface type	Specifies the number of the interface type to assign to the channel or range of channels. These types are listed below. The Onhook column has A bits on the left and B bits on the right. The conditioning column has different types of conditioning specified. If you designate interface type number 1 to indicate a user-configured interface type, the system prompts for: onhook A, onhook B, onhook C (if applicable), onhook D (if applicable), conditioning A, conditioning B, conditioning C (if applicable), conditioning D (if applicable), and conditioning template information.

Interface Number	Interface Type	Onhook	Conditioning
1	User Config		
2	Unconfig	? ? - -	a
3	No Sig	? ? ? ?	a
4	Force Sig	? ? - -	a
5	2W E&M	0 X - -	a
6	4W E&M	0 X - -	a
7	FXO	11 - -	b
8	FXS G/S	01 - -	c
9	FXS L/S	0 X - -	d
10	DPO	0 X - -	a
11	DPT	0 X - -	a
12	RPO	0 X - -	a
13	RPT	0 X - -	a
14	SDPO	0 X - -	a
15	DX	0 X - -	a
16	ETO	? ? - -	e
17	PLAR	? ? - -	d
18	PLR	0 X - -	a
19	RD	? ? - -	a
20	R1 (SOCOTEL)	0 - - -	e
21	SSDC5A	1 1 0 1	f
22	R2 (backward)	1 1 - -	e
23	R2 (forward)	1 0 - -	d

When the IPX or IGX receives A, B, C, and D bits corresponding to the onhook values, that channel is known to be onhook. If the A, B, C, and D bits do not correspond to the onhook values, that channel is known to be offhook

onhook A	A-bit value for the onhook state of a channel or set of channels.
onhook B	B-bit value for the on-hook state of a channel or set of channels.
onhook C	C-bit value for the on-hook state of a channel or set of channels.

Parameter	Description										
onhook D	D-bit value for the on-hook state of a channel or set of channels. Possible values are: <table><tbody><tr><td>1</td><td>high</td></tr><tr><td>0</td><td>low</td></tr><tr><td>X</td><td>don't care</td></tr><tr><td>?</td><td>don't know</td></tr><tr><td>-</td><td>not used</td></tr></tbody></table>	1	high	0	low	X	don't care	?	don't know	-	not used
1	high										
0	low										
X	don't care										
?	don't know										
-	not used										
conditioning template	One of many predefined or user-defined conditioning templates in the range of 00000000 to 11111111. (See dspond and cnfcond commands). Each interface type, except for option 1, has a predetermined conditioning template associated with it. These represent the A, B, C, D bit values as well as the substitute PCM voice sample sent to the attached equipment in case the voice connection fails for any reason.										

cnfxmtsiz

Allows the node to pass A, B, C, and D channel signaling bits through unchanged, or to invert, or hold them at a given value for a CDP or CVM line. It affects signaling bits in the transmit direction (to the PBX or channel bank) in an E1 system. The command configures the transmit signaling. Channel signaling bit options are T (transparent), 0, 1, or I (invert). If signaling is set to "not used" (-) by **cnfchtp**, the following is maintained: A=1, B=1, C=0, D=1.

Full Name

Configure transmit signaling

Syntax

cnfxmtsiz <channel(s)> <[A/]Conv> <[B/]Conv> <[C/]Conv> <[D/]Conv>

Related Commands

cnfrcvsig, **dspsigqual**

Attributes

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

Example 1

```
cnfxmtsiz 8.1 a/I b/0 c/1 d/t
```

Description

Configure the transmit signaling for channel 8.1 to inverted for the A bit, inhibited for the B bit, asserted for the C bit and transparent for the D bit.

System Response

```
beta          TRM   YourID:1          IPX 32    9.1    Aug. 23 1997 11:38 MST
```

```

                                Signalling Qualifiers
From 8.1    TXAbit  TXBbit  TXCbit  TXDbit  RXAbit  RXBbit  RXCbit  RXDbit
8.1        1        0        1        T        T        0        I        I
8.2-31    T        T        T        T        T        T        T        T

```

Last Command: cnfxmtsiz 8.1 a/I b/O c/1 d/t

Next Command:

Table 6-18 **cnfxmtsiz-Parameters**

Parameter	Description
channel	Specifies the channel or range of channels to receive signaling.

Table 6-19 **cnfxmtsiz-Optional Parameters**

Parameter	Description
A/	Specifies the conversion applied to the A bit. <Conv> can be one of: 1: bit is asserted. 0: bit is inhibited. T: bit is passed transparently. I: bit is inverted.
B/	Specifies the conversion applied to the B bit.
C/	Specifies the conversion applied to the C bit.
D/	Specifies the conversion applies to the D bit.

delcon

Removes one or more voice connections from a network. You can delete connections at either end of the connection.

Do not delete a connection when the node at the other end of the connection is unreachable. The unreachable node does not recognize the deletion. Also, you must not delete a connection to an unreachable node then connect that deleted channel to another node.

Full Name

Delete connection

Syntax

delcon <channel(s)>

Related Commands

addcon, dspcon, dspcons

Attributes

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

Example 1

```
delcon 14.1
```

Description

Delete connection 14.1. The proposed deletions are highlighted, a prompt requests confirmation of the deletion. Enter a “y” to delete the highlighted connections or an “n” to keep the highlighted connections. The example shows the screen after deletion of 14.1.

System Response

```
alpha          TRM   YourID:1      IPX 16      9.1      Aug. 16 1997 09:35 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
                                0      L
                                0      L
                                0      L
```

Last Command: delcon 14.1

Next Command:

Table 6-20 delcon-Parameters

Parameter	Description
channel(s)	<p>Specifies a channel or range of channels to delete.</p> <p>The format for channel on a CDP or CVM is <i>slot.channel</i></p> <p>The format for channel on a UVM is <i>slot.line.channel</i>.</p> <p>For a range of channels, separate the first and last channel with a dash (-).</p>

dspchcnf

Displays configuration details for voice, data, or Frame Relay channels. When you specify a voice channel with **dspchcnf**, the display shows:

- Percent of channel utilization
- Adaptive voice enable status
- Fax enable status
- Gain in both directions (in decibels)
- Dial Type
- Interface type (such as 2w E&M)
- Onhook and conditioning specifications

For the contents of the display when you apply **dspchcnf** to a serial data channel or Frame Relay channel, refer to the chapters in this manual that describe those traffic types.

Full Name

Display channel configuration

Syntax

dspchcnf <start_channel>

Related Commands

cnfchadv, **cnfchdfm**, **cnfchdl**, **cnfcheia**, **cnfchgn**, **cnfchtp**, **cnfchutl**

Attributes

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

Example 1

```
dspchcnf 7.1.1
```

Description

Display the channel configuration of line 7.1.1-24. The card in slot 7 is a UVM.

System Response

```

sw109          VT    cisco    IGX 8420    9.1 Sept. 20 1997 18:59 PST

                % Adaptive          Gain (dB) Dial  Interface          OnHk  Cond
Channels Util Voice      Fax    In  Out   Type  Type          A  B  C  D Crit
7.1.1-24  40 Enabled Disabled 0    0   Inband 2W E&M      0  X  -  -  a
7.2.1-24  40 Enabled Disabled 0    0   Inband Unconfig  ?  ?  -  -  a

```

Last Command: dspchcnf 7.1.1

Next Command:

Table 6-21 dspchcnf-Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. The format for a CDP or CVM is <i>slot.channel</i> . The format for a UVM is <i>slot.line.channel</i> .

dspchdlcnf

Displays dial type configurations for all channels on a circuit line as follows:

Table 6-22 Information in dspchdlcnf Display

Channel Type	Dial Type	Description
All	Dial Type	Inband, pulse, or user-configured.
User-configured	signaling delay	The signaling delay on a channel. The range is 12 ms–96 ms.
	minimum wink	The minimum wink on the channel. The range is 3 ms–765 ms. (Minimum wink does not apply to a CDP or CVM channel.)
	interdigit time	The interdigit times on a channel. The range is 3 ms–765 ms. (Interdigit time does not apply to a CDP or CVM channel.)
	playout delay	The playout delay on a channel. The range is 12 ms–96 ms.

Full Name

Display channel dial type configurations

Syntax

dspchdlcnf <start_channel>

Related Commands

cnfchdl

Attributes

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

Example 1

```
dspchdlcnf 14.1
```

Description

Display the dial type configuration for all channels beginning with 14.1.

System Response

```
alpha          TRM   YourID:1      IPX 16      9.1      Aug. 16 1997 09:45 PST
```

```
Channels  Type   Sig Delay   Min Wink   IntDigit Time   Playout Delay
14.1-24   Inband    12        141        300         -
```

```
Last Command: dspchdlnf 14.1
```

```
Next Command:
```

Table 6-23 **dspchdlnf-Parameters**

Parameter	Description
start channel	Specifies the channel at which the display begins. For a CDP or CVM, the format is <i>slot.channel</i> . For a UVM, the format is <i>slot.line.channel</i> .

dspchec

Displays the integrated echo canceller (IEC) parameters for one or more voice channel(s). The **dspchec** command does not apply to CAS or data channels. The specified channels must be on a CDP, CVM, or UVM. Table 6-24 lists the displayed parameters and possible values.

Table 6-24 Information in the dspchec Display

Category	Possible Value
Echo cancellation	Enabled or Disabled
Echo Return Loss (.1 dBs)	High/low (loss is in units are 0.1 dBs)
Tone Disabler	Enabled or Disabled
Convergence	Enabled or Disabled
Non-Linear Processing	Enabled or Disabled
Voice Template	USA, other

Full Name

Display channel echo canceller configuration

Syntax

dspchec <channel(s)>

Related Commands

cnfchec

Attributes

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

Example 1

```
dspchec 7.1
```

Description

Display the echo canceller configuration for channel 7.1.

System Response

```

pubsipx1      TN      cisco      IPX 16      9.1      July 27 1997 06:10 PDT

Channels      Echo      Echo Return      Tone      Conver-      Non-Linear Voice
Cancel      Loss (.1 dBs)      Disabler      gence      Processing Tmpl
7.1      Enabled      High 60      Enabled      Enabled      Enabled      USA
7.2-31      Disabled      High 60      Enabled      Enabled      Enabled      USA

```

Last Command: dspchec 7.1

Next Command:

Table 6-25 **dspchec-Parameters**

Parameter	Description
channels	Specifies the channel or channels to display. For a CVM or CDP, the format is <i>slot.channel(s)</i> . For a UVM, the format is <i>slot.line.channel(s)</i> .

dspcon

Displays connection information for a specified channel. The information displayed includes:

- The channel numbers for both the local and remote ends of the connection.
- The node names at both ends of the connection.
- The routing restriction.
- The class of service (COS) of the connection (see **cnfcos** description for details).
- The connection route listing the end nodes and any intermediate nodes.
- The preferred route for the connection (if configured).
- If cost-based routing is configured, displays maximum and current costs for a connection route.
- The status of the cards associated with the connection.
- Any Y-cable conflicts.
- The type of the compression, if applicable (VAD, ADPCM, LDCELP, CACELP for voice; repetitive pattern suppression (RPS) applies to data connections).

The status that may be displayed includes:

ok	Connection good
failed	Connection failed

Full Name

Display connection

Syntax

dspcon <channel>

Related Commands

addcon, **cnfrtcost**, **cnfpref**

Attributes

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

Example 1

```
dspcon 6.1
```

Description

Display connection information for 6.1.

System Response

```
sw196          VT    cisco    IGX 8420    9.1          Oct. 19 1997 13:35 PDT
Conn:  6.1          sw83          7.13          c16          Status: OK

Owner: LOCAL Restriction: NONE COS: 2 Compression: ADPCM

Path:  sw196    14-- 6.1sw86    1.1-- 11sw83
Pref:  sw196    14-- 6.1sw86    1.1-- 11sw83

sw196    Line  6: OK          ONHK sw83    Line  7: OK

Last Command: dspcon 6.1

Next Command:
```

Table 6-26 dspcon-Parameters

Parameter	Description
channel	Specifies the channel for the connection details display. The command displays connection information for one channel at a time. The format for <i>channel</i> on a CDP or CVM is <i>slot.channel</i> . The format for a channel on a UVM is <i>slot.line.channel</i> .

dspcond

Displays the signaling bit patterns from the specified template. Refer to the description of the **cnfcond** command for the purpose of the conditioning template.

Full Name

Display conditioning criteria

Syntax

dspcond <identifier>

Related Commands

cnfchtp, **cnfcond**

Attributes

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

Example 1

```
dspcond a
```

Description

Display the conditioning template identified as “a.”

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 09:56 PST

Conditioning criterion a:

Data Pattern

01010100 - E1

01111111 - T1

Signalling Pattern

A 0(40)/1

B 1

C 1

D 1

Last Command: dspcond a

Next Command:

Table 6-27 dspcond-Parameters

Parameter	Description
identifier	Specifies the identifier of the template.

dspcons

Displays a summary of the connections on an IPX or IGX node. Table 6-28 shows the fields displayed in the **dspcons** screens.

Table 6-28 Information in the dspcons Display

Fields	Description
Local Channel	The connection's channel at this node.
Remote Node Name	The name of the node at the other end of the connection.
Remote Channel	The connection's channel at the remote node.
State	The state of the connection(s) as follows: <ul style="list-style-type: none"> • OK Routed • Down Downed • OK Downed 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
Type	The type of connection (v = voice, d = data, fr = Frame Relay, atfr = ATM to Frame Relay interworking, atfst = ATM to Frame Relay interworking with ForeSight, -fail = failed connections; data rate in kbps for data)
Compression	The type of compression applied to the connection. The types of voice compression appear earlier in the chapter. The compression that applies to data connections is the purchased option called repetitive pattern suppression (RPS).
COS	The Class Of Service.
Loopback	A connection with a local loopback is indicated by a right parenthesis symbol between the "Local Channel" and "Remote NodeName" columns. A Frame Relay connection with a port loopback is indicated by a right bracket symbol between the "Local Channel" and "Remote NodeName" columns. A connection with a remote loopback is indicated by a right parenthesis symbol before the channel number in the "Remote Channel" column.
Local/Remote A-bit	A-bit status on the local and remote nodes if -abit option selected. Note that -abit is incompatible with -v, -d, and +d.

Full Name

Display connections

Syntax

```
dspcons [start_channel] [nodename] [state] [type]
[-g | +d | -v | -d | -f | -abit | -fabit | -atfr | -siw | -fail | -down]]
```

Related Commands

addcon, cnfchadv, chfchdfm

Attributes

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

Example 1

`dspcons`

Description

Display a summary of all connections.

System Response

```

pubsipx1      TN      cisco      IPX 16      9.1      July 24 1997 23:04 PDT

  Local      Remote      Remote
  Channel    NodeName    Channel    State  Type      Compress  Code  COS
  5.1.100    pubsipx3    5.1.200    Ok     fr                0

```

Last Command: `dspcons`

Next Command:

Example 2

`dspcons -abit`

Description

Display connections and abit status.

System Response

```

sw53          VT   cisco      BPX 15      9.1      July 25 1997 11:52 GMT

Local        Remote      Remote      State      Local      Remote
Channel      NodeName    Channel
4.1.2.1     sw53        4.3.2.1     Ok         OK         OK
4.1.2.2     sw53        4.3.2.2     Ok         OK         OK
4.1.2.3     sw53        4.3.2.3     Ok         OK         OK
4.1.2.4     sw53        4.3.2.4     Ok         OK         OK
4.1.2.5     sw53        4.3.2.5     Ok         OK         OK
4.1.2.6     sw53        4.3.2.6     Ok         OK         OK
4.1.2.7     sw53        4.3.2.7     Ok         OK         OK
4.1.2.8     sw53        4.3.2.8     Ok         OK         OK
4.1.2.9     sw53        4.3.2.9     Ok         OK         OK
4.1.2.10    sw53        4.3.2.10    Ok         OK         OK
4.1.2.11    sw53        4.3.2.11    Ok         OK         OK
4.1.2.12    sw53        4.3.2.12    Ok         OK         OK
    
```

This Command: dspcons -abit

Continue?

Table 6-29 dspcons—Optional Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. The start channel on a CDP or CVM is specified as <i>slot.channel</i> . The start channel on a UVM is <i>slot.line.channel</i> .
node name	Specifies that only connections to this remote node from the local node be displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed.
connection type	Specifies that only connections of a certain type be displayed. If you do not add at least one argument to specify a particular connection type, all connections appear. When you enter the connection type on the command line, precede it with a hyphen (-). In some cases, you can add more than one connection type (with a space between), but not all compound arguments are compatible, so you may not always see the expected combination of types. The connection types are: -v displays only voice connections. -d displays only data connections. -f displays only Frame Relay connections. -abit shows A-bit (nni) status. -fabit shows connections with failed A-bit (nni) status. -fail shows only failed connections -siw shows service interworking connections. -atfr shows only network interworking connections.
+d	Causes the display to show the user-configured descriptor for the connection instead of the compression and ownership fields.

dspconst

Displays the status of the circuit line(s) and continues to display the status until you press the Delete key. While the display is on the screen, the status is automatically updated. The update frequency is one second for each circuit line being displayed. (For example, if only one line is displayed, the update frequency is once per second, if three circuit lines are displayed, the update frequency is once per three seconds). Table 6-30 shows the connection type. **cnfchtp** must be correctly configured.

Table 6-30 **Types of Connection Status**

Symbol	Description
+	offhook
-	onhook
m	slow modem
M	fast modem
F	FAX
blank	channel not connected

Full Name

Display connection state for line connections

Syntax

dspconst [circuit line]

Related Commands

cnfchtp

Attributes

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

Example 1

```
dspconst
```

Description

Display the condition state for the voice channels on the node.

System Response

```
alpha          TRM  YourID:1          IPX 16      9.1      Aug. 16 1997 09:55 PST

Connection status display

+ offhook, - onhook, m slow modem, M fast modem, F FAX
          1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 3 3
CLN      1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

14      +
```

This Command: dspconst

Hit DEL key to quit:

Table 6-31 dspconst–Optional Parameters

Parameter	Description
circuit line	Specifies the number of the line for the channel state display. If you do not specify a line, all upped circuit lines (up to a maximum of eight at once) are displayed.

dsprtcache

New in Release 9.1, this command displays the cache of all cost-based routing connections. The optional 'index' parameter lets you specify a cache entry index. The optional 'c' parameter clears the cache. The information displayed includes:

Full Name

Display cost-based route cache

Syntax

dsprtcache [index] [c]

[index] specifies the cache entry index

[c] specifies to clear the entire cache or a single entry

Related Commands

dspcon, cnfrtcost, cnfpref

Attributes

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

Example 1

```
dsprtcache
```

Description

Display route cache contents, and let you monitor and manually clear the cache.

System Response

```
pissaro TN StrataCom BPX 15 9.1 Jun. 18 1997 11:11 GMT
Route Cache (Summary)
Index Use # Cost Delay Restrict Load VPC Hops RemoteNode
0 Yes 1 Yes No None VBR No 2 lautrec
1 Yes 6 Yes No *s BDB No 3 vangogh
2 Yes 9 Yes No None BDA No 3 matisse
3 Yes 3 Yes No *t BDB No 3 rousseau
4 Yes 1 Yes No None CBR No 3 seurat <- current
5 No 0 No No None --- No 0 ---
6 No 0 No No None --- No 0 ---
```

7	No	0	No	No	None	---	No	0	---
8	No	0	No	No	None	---	No	0	---
9	No	0	No	No	None	---	No	0	---
10	No	0	No	No	None	---	No	0	---
11	No	0	No	No	None	---	No	0	---

Last Command: dsprtcache

Next Command:

Table 6-32 dsprtcache-Parameters

Parameter	Description
index	Specifies a particular route entry within the cache. When used with the c parameter, the route is either displayed or cleared from the cache.
c	Clears the cache, or if you also enter the index parameter, clears the route cache specified by the index number.

dspsigqual

Displays the configuration for the A, B, C, and D bit signaling qualifiers for all channels. The only parameter is the starting channel. You set the values for these signaling bits with the **cnfrcvsig** and **cnfxmtsiz** commands. Note that these signaling bit states are different from the states during circuit alarm (signaling conditioning).

During normal operation of the voice circuit, the A, B, C, and D signaling bits may be held at a fixed value (0 or 1), inverted (I), or passed through transparently (T). For the direction of the signals, the transmit direction is towards the PBX or channel bank. Receive is from the external equipment.

Full Name

Display signaling qualifiers

Syntax

dspsigqual <start channel>

Related Commands

cnfxmtsiz, **cnfrcvsig**

Attributes

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

Example 1

```
dspsigqual 8.1
```

Description

Display the channel signaling bit qualifiers for channel 8.1.

System Response

```
beta          TRM   YourID:1      IPX 32      9.1      Aug. 23 1997 11:39 MST
```

Signalling Qualifiers

From 8.1	TXAbit	TXBbit	TXCbit	TXDbit	RXAbit	RXBbit	RXCbit	RXDbit
8.1	1	0	1	T	T	0	I	I
8.2-31	T	T	T	T	T	T	T	T

Last Command: dspsigqual 8.1

Next Command:

Table 6-33 dspsigqual-Parameters

Parameter	Description
start channel	Specifies the starting channel. On a CDP or CVM, the format is <i>slot.channel</i> . On a UVM, the format is <i>slot.line.channel</i> .

dspvcst

Displays the voice SVC statistics.

Full Name

Display voice SVC statistics

Syntax

dspvcst

Related Commands

None

Attributes

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

Example 1

```
dspvcst
```

Description

Display the voice SVC statistics for the current node.

System Response

sw91 TN cisco IPX 8 9.1 Aug. 29 1997 14:11 GMT

Number of Active SVC	:	0
Number of SVC Requests	:	0
Number of Failed Requests	:	0
Last Reason for request failure	:	0
Number of Completed SVC Routes	:	0
Number of Failed SVC Routes	:	0
Number of Deleted SVC(s)	:	0
Number of Failed SVC	:	0
Max Secs To Perform SVC Route	:	0.000
Avg Secs To Perform SVC Route	:	0.000

Last Command: dspsvcst

Next Command:

prtchcnf

Prints the configuration details for voice channels or data channels. This command uses the same syntax, and prints the same information as is displayed using the **dspchcnf** command. See the **dspchcnf** command for syntax and output information.

Full Name

Print channel configurations

Syntax

prtchcnf [start_channel]

Related Commands

dspchcnf

Attributes

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

Example 1

```
prtchcnf 14.1
```

Description

Print the configuration values of circuit line 14.1.

System Response

None available because this command produces hardcopy.

Table 6-34 prtchcnf–Parameters

Parameter	Description
start channel	Specifies the starting channel for the print output. On a CDP or CVM, the format is <i>slot.channel</i> . On a UVM, the format is <i>slot.line.channel</i> .

prtchdlcnf

Prints the dial type configurations for channels on a circuit line.

Full Name

Print dial type configuration for channels

Syntax

prtchdlcnf <start_channel>

Related Commands

cnfchdl, dspchcnf

Attributes

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

Example 1

```
prtchcnf 14.1
```

Description

Print the dial type configuration for all channels beginning with 14.1.

System Response

None available as this command produces hardcopy.

Table 6-35 prtchdlcnf–Parameters

Parameter	Description
start channel	Specifies the starting channel for the print output. On a CDP or CVM, the format is <i>slot.channel</i> . On a UVM, the format is <i>slot.line.channel</i> .

prtcons

Prints a summary of connections terminated at the IPX or IGX node.

Full Name

Print connections

Syntax

prtcons [start_channel] [nodename] [type]

Related Commands

dspcons

Attributes

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

Example 1

```
prtcons
```

Description

Print a summary of all connections.

System Response

None available as this command produces hardcopy.

Table 6-36 prtcons–Optional Parameters

Parameter	Description
start channel	Specifies the starting channel. On a CDP or CVM, the format is <i>slot.channel</i> . On a UVM, the format is <i>slot.line.channel</i> .
node name	Specifies that only connections to this remote node from the local node be displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed.
connection type	Specifies that only connections of the specified type appear. If you do not include a connection-type argument, all connections appear. Connection types require a hyphen (-). Valid connection type entries are: <ul style="list-style-type: none"> <li>-v Displays only voice connections. <li>-d Display only data connections. <li>-f Displays Frame Relay connections. <li>-nni Displays Frame Relay network to network connections for failed connections only.

Data Connections

Data commands apply to the setting up, configuring, and statistical reporting on data connections. For descriptions of the data commands on a FastPAD, refer to the *FastPAD User's Guide*. Examples of the tasks described in the chapter are:

- Setting up a circuit line and a data connection
- Configuring data channel redundancy
- Using interface control templates
- Enabling DFM and data channel utilization
- Enabling Embedded EIA operation
- Setting up DDS trunks

The nodes and card sets to which the commands in this chapter apply are:

- On an IPX node, the card sets are the:
 - SDP/SDI
 - LDP/LDI
 - CDP/BC-T1, BC-E1, or BC-J1
- On an IGX node, the card sets are the:
 - HDM/SDI,
 - LDM/LDI
 - CVM/BC-T1, BC-E1, or BC-J1
 - UVM/UVI-2T1, UVI-2E1, or UVI-2J1

Setting Up a Data Connection

To set up a data connection:

- Step 1** If necessary, configure the data channel at each end of the connection. Default configuration parameters exist, so using the following commands are optional. The designation of a data channel has the format *slot.port*. For example, 6.3 is port 3 on the card in slot 6. The items that need configuring depend on the type of data connection. The configuration commands and their associated parameters are as follows.

- `cnfdclk` Specifies the clocking for the data channel

- `cnfcldir` Sets the control leads for bidirectional pins 11 and 23 on an EIA/TIA-232 data channel. The default is *input*
- `tstport` Use sixth lead feature to provide test port loopback
- `addyred` Enables optional card redundancy. This step requires extra hardware.
- `cnfict` Configures an interface control template that determines output lead behavior for data channels. Output leads can be either configured as steady state (on or off) or programmed to follow an input lead. Five types of templates exist for channels in active, conditioned, looped, near, and far states.
- `cpyict` Copies interface control template information from one channel to another. This step is optional.

Step 2 Add the connection with the **addcon** command. The above configuration must have been completed at each end before the connection can be added.

Configuring Data Channel Redundancy

You can configure redundant data channels by installing two identical card sets in adjacent slots and connecting the cards to the customer's line through a Y-cable. Applicable commands are"

- Use the **addyred** command to establish the redundant connection between the two card sets.
- Use the **delyred** command to remove redundancy from a redundant pair.
- Use the **dspyred** command to display Y-cable configurations.
- Use the **prtyred** command to print Y-cable configurations.

Using an Interface Control Template

Data channels have an associated default interface control template for each of the active (normal), conditioned, looped, near and far states. The templates define how the control leads at the data interface are to be configured (asserted, inhibited, follow a local source or follow a remote source). The interface control template can be changed by using the **cnfict** command. Each template and each control lead must be configured individually. The **cpyict** (copy interface control panel) can be used to apply (copy) the settings of a template for one data channel to those of a template for another data channel.

Enabling DFM and Data Channel Utilization

DFM (Data Frame Multiplexing) is a feature on the IPX and IGX nodes in which repetitive data patterns (such as IDLE codes) are suppressed at the source and regenerated at the remote node. This feature has the effect of approximately doubling the bandwidth of the data channel.

Note DFM operates on connections with maximum rate of 128 Kbps.

The command for changing the DFM enable-status for individual data channels is **cnfchdfm**. Before you execute this command, make sure the DFM feature has been activated on each applicable node by Customer Service. You can check the DFM configuration for a channel by using the **dspchcnf** command. When the DFM feature is first activated at a node, it has the following default values:

- Percent of channel utilization is 100%
- Pattern length is 8 bits
- DFM status is enabled.

Enabling Embedded EIA Operation on the LDP or LDM

The EIA feature encodes the status of the CTS or RTS lead as the eighth bit in each data byte. The byte subsequently is processed in accordance with the DFM algorithm, which remains unchanged.

Any DCE and DTE combination at each end is valid. A typical configuration might have the LDP at one end of a connection as DCE (normal clocking) and an LDM at the other end as DTE (looped clocking). RTS is transmitted in encoded form from the remote end to the local end, and CTS is transmitted in the other direction. Other EIA leads use the non-interleaved format.

The EIA feature is allowed for all legal baud rates 19.2 kbps and below and is activated by typing encoding type 7/8E followed by an *Z when adding a connection using the **addcon** command. Different channels on the same card may be set up with or without the feature, but all ports on the card must be configured at or below 19.2 kbps for EIA to be active. Note that you do not have to enter *Z after 7/8E on the command line because the system automatically enters it.

Setting Up DDS Trunks

DDS Trunks normally operate at 56 Kbps. The IPX and IGX nodes can provide a direct interface to a DDS line and provide limited distance access to Data Service Units (DSUs) by using the DDS format over private lines. The LDI4/DDS back card and LDP (Model B) or LDM front card support DDS. Each LDI/DDS supports four DDS trunks in DSU or OCU modes.

- Use the **cnfdchtp** command to configure the DDS port. Specify OCU or DSU for the port type.
- Add the connection using the **addcon** command. When prompted for the rate, enter 2.4 Kbps, 4.8 Kbps, 9.6 Kbps, 19.2 Kbps, or 56 Kbps.

Summary of Commands

Table 7-1 shows the full command name and starting page of each description:

Table 7-1 Data Connection Commands

Mnemonic	Description	Page
addcon	Add connection	7-5
cnfchdfm	Configure Data Frame Multiplexing (DFM)	7-18
cnfcheia	Configure EIA	7-20
cnfkdir	Configure control lead direction	7-22
cnfdchtp	Configure data channel interface type	7-24
cnfdclk	Configure data clock	7-27
cnfict	Configure interface control template	7-31
cpyict	Copy interface control template	7-37
delcon	Delete connection	7-39
dspchcnf	Display channel configuration	7-41
dspecon	Display connection	7-43
dspecons	Display connections	7-45
dspict	Display interface control template	7-50
prtchcnf	Print channel configuration	7-52
prtcons	Print connections	7-53
prtict	Print interface control template	7-55

addcon

Establishes data channel connections between nodes in a network. After you add a connection using the **addcon** command, the node automatically routes the connection. The node where you execute **addcon** is the “owner” of the added connections. The concept of ownership is important because you must enter information about automatic rerouting and preferred routing at the node that owns the connection. See the **cnfpref** and **cnfcos** commands for more information on automatic rerouting. Before the node adds the connection, the proposed connection appears on the screen with a prompt for you to confirm the addition.

When applied to data connections, the **addcon** command adds a synchronous data connection to the network. You can add synchronous data connections to any node slot equipped with either an LDP or SDP card in an IPX node or an LDM or HDM in an IGX node. Before you add a connection, determine the desired data rate. To find the data rates that individual cards support, refer to the card descriptions in the *Cisco IGX 8400 Series Reference* manual or the *Cisco IPX Reference* manual.

When connecting sets of data channels, you do not have to specify the full channel set for the local end of the connection. You have to designate only the first channel in the range. For example, to add connects 27.1-4 at local node alpha to channels 9.1-4 at beta, you can enter “addcon 27.1-4 beta 9.1”. If Y-cable redundancy has been specified, you can add data connections at only primary card slots (not at the secondary card slots). See the **addyred** description for more information. Standard Data Rates tables follow, listing data rates. The following notations appear with some data rates:

- * Must be used with 8/8 or 8/8I coding.
- /n Specifies a partially filled packet type: the /n allows partial packets to be sent and so avoid the delay incurred by waiting to build a full packet
- f Entered after the data rate, an *f* specifies “fast EIA” (interleaved EIA) for the connection.
- t Indicates “transparent” (CDP or CVM substrate DS0A): if you include the t-option, the IGX node does not check for supervisory or control information.

Table 7-2 Data Connection Load Table with Normal EIA and No DFM

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
1.2	43	28	38	32
1.8	65	28	57	32
2.4	35	70	30	80
3.2	46	70	40	80
3.6	52	70	45	80
4.8	35	140	30	160
6.4	46	140	40	160
7.2	52	140	45	160
8	58	140	50	160
9.6	69	140	60	160
12	86	140	75	160
12.8	92	140	80	160
14.4	103	140	90	160
16	115	140	100	160
16.8	120	140	105	160
19.2	138	140	120	160
24	172	140	150	160
28.8	206	140	180	160
32	229	140	200	160
38.4	275	140	240	160
48	343	140	300	160
56	381	147	334	160
57.6	392	147	360	160
54	436	147	381	168
72	490	147	429	168
76.8	523	147	458	168
84	572	147	500	168
96	654	147	572	168
112	762	147	667	168
115.2	784	147	686	168
128	871	147	762	168
144	980	147	858	168
168	1143	147	1000	168
192	1307	147	1143	168
224	1524	147	1334	168
230.4	1568	147	1372	168

Table 7-2 Data Connection Load Table with Normal EIA and No DFM (Continued)

256	1742	147	1524	168
288	1960	147	1715	168
336	2286	147	2000	168
384	2613	147	2286	168
448	3048	147	2667	168
512	3483	147	3048	168
672	4572	147	4000	168
768	5225	147	4572	168
772	5252	147	4596	168
896	6096	147	5334	168
1024	6966	147	6096	168
1152	7837	147	6858	168
1344			8000	168

Unshaded connections generate timestamped data packets. Shaded connections generate non-timestamped data packets.

Table 7-3 Data Connection Load Table with Interleaved EIA

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
1.2f	35	35	30	40
1.8f	52	35	45	40
2.4f	35	70	30	80
3.2f	46	70	40	80
3.6f	52	70	45	80
4.8f	69	70	60	80
6.4f	92	70	80	80
7.2f	103	70	90	80
8f	115	70	100	80
9.6f	138	70	120	80
12f	172	70	150	80
12.8f	183	70	160	80
14.4f	206	70	180	80
16f	229	70	200	80
16.8f	240	70	210	80
19.2f	275	70	240	80
24f	343	70	300	80
28.8f	412	70	360	80
32f	458	70	400	80
38.4f	549	70	480	80
48f	686	70	600	80
56f	800	70	700	80
57.6f	823	70	720	80
54f	915	70	800	80
72f	1029	70	900	80
76.8f	1098	70	960	80
84f	1200	70	1050	80
96f	1372	70	1200	80
112f	1600	70	1400	80
115.2f	1646	70	1440	80
128f	1829	70	1600	80
144f	2058	70	1800	80
168f	2400	70	2100	80
192f	2743	70	2400	80
224f	3200	70	2800	80
230.4f	3292	70	2880	80

Table 7-3 Data Connection Load Table with Interleaved EIA (Continued)

256f	3658	70	3200	80
288f	4115	70	3600	80
336f	4800	70	4200	80
384f	5486	70	4800	80
448f	6400	70	5600	80
512f	7315	70	6400	80

Connections above the line generate timestamped data packets. Shaded connections generate non-timestamped data packets. DFM is not available on interleaved EIA connections.

Table 7-4 Data Connection Load Table with Partially Filled Paclets and No DFM

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
2.4/4	86	28	75	32
3.2/4	115	28	100	32
3.6/4	129	28	113	32
4.8/10	69	70	60	80
4.8/4	172	28	150	32
6.4/10	92	70	80	80
6.4/4	229	28	200	32
7.2/10	103	70	90	80
7.2/4	258	28	225	32
8/10	115	70	100	80
9.6/10	138	70	120	80
12/10	172	70	150	80
12.8/10	183	70	160	80
14.4/10	206	70	180	80

All of the above connections generate timestamped data packets.

Table 7-5 Data Connection Load Table with Normal EIA and DFM

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
1.2	58	21	24	3
1.8	86	21	24	3
2.4	39	63	72	9
3.2	51	63	72	9
3.6	58	63	72	9
4.8	37	133	152	19
6.4	49	133	152	19
7.2	55	133	152	19
8	61	133	152	19
9.6	73	133	152	19
12	91	133	152	19
12.8	97	133	152	19
14.4	109	133	152	19
16	121	133	152	19
16.8	127	133	152	19
19.2	145	133	152	19
24	181	133	152	19
28.8	217	133	152	19
32	241	133	152	19
38.4	289	133	152	19
48	361	133	152	19
56	422	133	152	19
57.6	434	133	152	19
64	482	133	152	19
72	542	133	152	19
76.8	578	133	152	19
84	632	133	152	19
96	722	133	152	19
112	843	133	152	19
115.2	867	133	152	19
128	963	133	152	19

All of the above connections generate timestamped data packets.

Table 7-6 Data Connection Load Table with Partially Filled Packets and DFM

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
2.4/4	115	21	100	24
3.2/4	153	21	134	24
3.6/4	172	21	150	24
4.8/10	77	63	67	72
4.8/4	229	21	200	24
6.4/10	102	63	89	72
6.4/4	305	21	267	24
7.2/10	115	63	100	72
7.2/4	343	21	300	24
8/10	127	63	112	72
9.6/10	153	63	134	72
12/10	191	63	167	72
12.8/10	204	63	178	72
14.4/10	229	63	200	72

All of the above connections generate timestamped data packets.

Table 7-7 Data Connection Load Table with Partially Filled Packets and Interleaved EIA

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
1.2f/2	86	14	75	16
1.8f/2	129	14	113	16
2.4f/5	69	35	60	40
2.4f/2	172	14	150	16
3.2f/5	92	35	80	40
3.2f/2	229	14	200	16
3.6f/5	103	35	90	40
3.6f/2	258	14	225	16
4.8f/5	138	35	120	40
6.4f/5	183	35	160	40
7.2f/5	206	35	180	40

All of the above connections generate timestamped data packets. DFM is not available on interleaved EIA connections.

Table 7-8 Sub-Rate Data Connection Load Table (HDM to HDM)

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
2.4t			35	80
4.8t			35	160
9.6t			70	160
56t			381	168
t			381	168

All sub-rate data connections use 8/8 coding. Unshaded connections generate timestamped data packets. Shaded connections generate non-timestamped data packets. DFM is not available on sub-rate connections. Interleaved EIA is not available on sub-rate connections.

Table 7-9 Sub-Rate Data Connection Load Table (HDM to HDM)

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
2.4/4t			88	32
4.8/10t			70	80
4.8/4t			175	32
9.6/10t			140	80

All sub-rate data connections use 8/8 coding. All of the above connections generate timestamped data packets. DFM is not available on sub-rate connections. Interleaved EIA is not available on sub-rate connections.

Table 7-10 Super-Rate Data Connection Load Table (LDM to HDM)

Bit Rate (kbps)	7/8 Coding		8/8 Coding	
	Pkt/Sec	Bits/Pkt	Pkt/Sec	Bits/Pkt
1x56	381	147	334	168
2x56	762	147	667	168
3x56	1143	147	1000	168
4x56	1524	147	1334	168
5x56	1905	147	1667	168
6x56	2286	147	2000	168
7x56	2667	147	2334	168
8x56	3048	147	2667	168
1x64	436	147	381	168
2x64	871	147	871	168
3x64	1307	147	1307	168
4x64	1742	147	1143	168
5x64	2177	147	1524	168
6x64	2613	147	1905	168
7x64	3048	147	2286	168
8x64	2483	147	2667	168

All of the above connections generate non-timestamped data packets. DFM is not available on interleaved EIA connections.

In "fast EIA" signalling mode, an interleaved byte of EIA signalling information is associated with every byte of data in a packet. This format is appropriate for applications where EIA lead transitions must closely synchronize with user data. Fast EIA can apply to data rates up to 512 Kbps.

When FastPackets are built using the 7/8 coding format, each octet in the FastPacket payload consists of seven user data bits followed by a "1." This "bit-stuffing" allows these FastPackets to be safely carried on trunks which enforce ones density requirements by ensuring that each octet contain at least one "1" (such as IGX trunks configured for ZCS or AMI encoding). The user data may have

any format and may contain any pattern, including all "0"s. The single "1" inserted in the final bit position of each octet ensures that no more than seven consecutive "0"s occur in a FastPacket. The 7/8 coding format is the safest mode to use when the data protocol is unknown and certain trunks in the network use ZCS or AMI.

When FastPackets are built using the 8/8 coding format, each octet in the FastPacket payload consists of eight user data bits. The 8/8 coding format is more efficient than the 7/8 format. However, the ones density requirement on trunks must be met by one of the following:

- Ensuring that the end-user equipment data protocol can never send more than seven consecutive "0"s.
- Ensuring that the connection can never be carried on a trunk which uses ZCS ones density enforcement.

The vast majority of trunks today use intelligent ones density enforcement schemes, such as B8ZS, HDB3, B3ZS, or CMI. All such trunks can safely carry 8/8 data connections with no risk of data corruption. Data connections can be configured to NOT use ZCS trunks by specifying the optional "*Z" routing restriction.

When FastPackets are built using the 8/8I coding format, each octet in the FastPacket payload consists of eight inverted user data bits, i.e., each "0" is changed to a "1" and each "1" is changed to a "0." The bits are re-inverted at the far end of the connection. For such connections, the ones density requirement on trunks must be met by one of the following:

- Ensuring that the end-user equipment data protocol can never send more than seven consecutive "1"s.
- Ensuring that connection can never be carried on a trunk which uses ZCS ones density enforcement.

As with the 8/8 coding format, 8/8I connections can be safely carried on the vast majority of trunks today. However, the 8/8I format is primarily intended to provide the efficiency of 8/8 coding for any data which is HDLC or SDLC-based. HDLC/SDLC can never send more than six consecutive "1"s, which, when inverted, automatically meets the ones density requirements of every possible trunk format.

If the data protocol requires an acknowledgment and is delay-sensitive avoid routing the connection over a satellite line (*s for avoid). If 8/8 or 8/8I coding is the selected format, avoid trunks with zero code suppression (*z for avoid) because the zero code suppression could corrupt the last bit in the byte.

Full Name

Add a connection

Syntax

```
addcon <local channel> <remote node> <remote channel> <type> <coding> [avoid]
```

Related Commands

delcon, dncon, dspcon, dspcons, upcon

Attributes

Privilege	1-2
Jobs	Yes
Log	No
Node	IPX, IGX
Lock	Yes

Example 1

```
addcon 6.1 pubsipx2 11.1 56
```

Description

Add a low speed data connection of 56 Kbps at 6.1. The connections are highlighted on the screen. A prompt appears asking you to confirm these connections. Respond “y” for yes to add the connection. The connections screen then appears showing that data channel 11.1 on node pubsipx2 is connected to channel 6.1 on node pubsipx1. The “56” under the “type” category indicates that the data rate for the channel is 56 Kbps.

System Response

```

pubsipx1      TN      SuperUser      IPX 16      9.1      July 25 1997 06:23 PDT

From          Remote      Remote
6.1           NodeName   Channel
6.1           pubsipx2   11.1         State  Type      Compress  Code COS
                                   Ok     56                7/8  0
    
```

Last Command: addcon 6.1 pubsipx2 11.1 56

Next Command:

Example 2

```
addcon 5.1 beta 6.1-4 4x64
```

Description (CDP super-rate connection)

Add a 256 Kbps (4x64) connection from an SDP at node “alpha” to the CDP at node “beta.” Data rates come from the Standard Data Rate Connections in the preceding pages. The elements on the command line consist of the following:

```
addcon slot.port remote nodename slot.start channel at far-end channel rate
```

Example 3

```
addcon 5.4-7 beta 6.1-4 4x64
```

Description (CDP to CDP or CVM to CVM)

Add a 256 Kbps (4x64) data connection from a CDP (or CVM) at node “alpha” to the CDP (or CVM) at node “beta.” The syntax for this example requires that the start and end channel are entered for both ends of the connection and that the *data rate* is specified to be the same at both ends. The channel *numbers* can be different on each end if they are contiguous.

```

addcon      slot.start channel -end channel      remote nodename
            slot.start channel -end channel      rate
    
```


Table 7-11 addcon-Parameters

Parameter	Description								
local channel	Specifies the local channel or set of channels in the format slot.port [-port]. (The brackets indicate you can specify a range of channels.)								
remote node	Specifies the name of the node at the other end of the connection. For a DACS-type connection (where a channel on a node connects to a channel on the same node), use the local node name for <i>remote node</i> .								
remote channel	Specifies the remote channel or set of channels in the format slot.port [-port]. (The brackets indicate you can specify a range of channels.)								
type	Specifies the data connection bit rate, EIA control lead mode, and in some cases, the number of data bytes in a data packet. Refer to the Standard Data Connection rates for allowable bit rates.								
coding	Specifies the data coding format for data transmissions. Valid formats are: <table border="0"> <tr> <td>7/8</td> <td>7 bits of user data plus a "1" inserted in the final bit position of each data byte in a data packet. This is the default coding.</td> </tr> <tr> <td>7/8e</td> <td>Used with LDP or LDM application.</td> </tr> <tr> <td>8/8</td> <td>8 bits of user data for each data byte in a data packet.</td> </tr> <tr> <td>8/8I</td> <td>8 bits of user data for each data byte in a packet. The data is inverted</td> </tr> </table>	7/8	7 bits of user data plus a "1" inserted in the final bit position of each data byte in a data packet. This is the default coding.	7/8e	Used with LDP or LDM application.	8/8	8 bits of user data for each data byte in a data packet.	8/8I	8 bits of user data for each data byte in a packet. The data is inverted
7/8	7 bits of user data plus a "1" inserted in the final bit position of each data byte in a data packet. This is the default coding.								
7/8e	Used with LDP or LDM application.								
8/8	8 bits of user data for each data byte in a data packet.								
8/8I	8 bits of user data for each data byte in a packet. The data is inverted								

Table 7-12 addcon-Optional Parameters

Parameter	Description						
avoid	Specifies the type of trunk for the connection to avoid. The default is no avoidance. The choices are: <table border="0"> <tr> <td>*s</td> <td>avoid satellite trunks.</td> </tr> <tr> <td>*t</td> <td>avoid terrestrial trunks.</td> </tr> <tr> <td>*z</td> <td>avoid trunks using zero code suppression techniques that modify any bit position to prevent long strings of 0s.</td> </tr> </table>	*s	avoid satellite trunks.	*t	avoid terrestrial trunks.	*z	avoid trunks using zero code suppression techniques that modify any bit position to prevent long strings of 0s.
*s	avoid satellite trunks.						
*t	avoid terrestrial trunks.						
*z	avoid trunks using zero code suppression techniques that modify any bit position to prevent long strings of 0s.						

cnfchdfm

Enables or disables Data Frame Multiplexing (DFM) for individual channels and sets the DFM parameters for the channels. The default state when the DFM feature is activated on a card is enabled. Because DFM is a purchased option, the Cisco Technical Assistance Center (TAC) must activate on the applicable nodes before you use the **cnfchdfm** command. The cards that support the use of **cnfchdfm** are the SDP and LDP on the IPX node and the LDM and HDM on the IGX node.

The DFM feature must be both *installed* and *enabled*. The DFM feature must be installed through software control at each node terminating the connection. If DFM is not installed for a pertinent node in the network, the **cnfchdfm** command has no effect at that node. Furthermore, you must use **cnfchdfm** at both ends of the connection to enable DFM.

Full Name

Configure channel DFM

Syntax

```
cnfchdfm <channel(s)> <7 | 8 | 16> [e | d]
```

Related Commands

dspchcnf

Attributes

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

Example 1

```
cnfchdfm 5.1 8
```

Description

Set the DFM pattern length to 8 bits for data channel 5.1.

System Response

```

alpha          TRM   YourID:1          IPX 16      9.1   Aug. 15 1997  16:21 PST

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

```

Last Command: cnfchdfm 5.1 8

Next Command:

Table 7-13 **cnfchdfm-Parameters**

Parameter	Description
channel	Specifies the channel or range of channels.
7/8/16	Specifies the pattern length in bits for the DFM algorithm. The default is 8 bits

Table 7-14 **cnfchdfm-Optional Parameters**

Parameter	Description
e/d	Enables or disables DFM. The default is "e." Note that DFM works at rates no higher than 128 Kbps.

cnfcheia

Sets the sampling rate for the updating EIA control leads. This rate can be set from 0 (no sampling) to 20 updates per second and defaults to 2 seconds. This rate governs the polling interval and packet generation rate for the EIA leads associated with the channel.

At 20 updates/second, the control leads are polled for changes every 50 msec. Therefore, changes occurring more rapidly than that may not be detected. If there is no change in EIA lead status, no packet is sent. A minimum of one update per second is sent if the maximum update rate chosen is from 1 to 20. If the connection is configured in such a way that an implied isochronous clock is detected, the update rate is always 20 per second in the same direction as that of the clock signal. For 1.544 Mbps data connections, this defaults to 0. This does not affect EIA sampling rates of “fast EIA” or “embedded” EIA leads.

Full Name

Configure EIA update rate for channels

Syntax

cnfcheia <channel(s)> <update_rate>

Related Commands

dspchcnf

Attributes

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

Example 1

```
cnfcheia 5.1 15
```

Description

Set the EIA update rate to 15 sec. for data channel 5.1.

System Response

```

alpha          TRM   YourID:1          IPX 16   9.1   Aug. 15 1997 16:20 PST

Channels      Maximum EIA    %      DFM Pattern  DFM
Update Rate  Util          Length  Status
5.1          15           100     8           Enabled

```

Last Command: cnfcheia 5.1 15

Next Command:

Table 7-15 **cnfcheia-Parameters**

Parameter	Description
channel	Specifies the channel or range of channels to over which to configure the EIA update rate.
update rate	Specifies the maximum EIA update rate in updates per second.

cnfcldir

Sets the control lead direction for pins 11 and 23 on the EIA/TIA-232 data channels of an SDP or HDM card set. This allows the control leads to carry “backward” channels. Pins 11 and 23 on an EIA/TIA-232 interface are bi-directional. The signals on these pins can have various names, such as SI, SF, CH, CI, and QM. To display control lead information about pins 11 and 23, use the **dspbob** command. Use the **cnfict** command to configure the behavior of all output leads.

Full Name

Configure control lead direction

Syntax

cnfcldir <channel> <lead> <direction>

Related Commands

cnfict, **dspbob**, **dspict**

Attributes

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

Example 1

```
cnfcldir 3.1 11 input
```

Description

Configure lead number 11 of channel 3.1 to be an input. The screen example shows the display after the system has accepted the input as valid.

System Response

```
pubsipx1      TN      SuperUser      IPX 16      9.1      Aug. 14 1997 00:30 GMT
```

```
Port:          3.1
Interface:     V35   DCE
Clocking:      Normal
```

Inputs from User Equipment				Outputs to User Equipment			
Lead	Pin	Lead	Pin	Lead	Pin	Lead	Pin
RTS	C			CTS	D		
DTR	H			DSR	E		
TxD	P/S			DCD	F		
TT	U/W			RI	J		
				TM	K		
				RxD	R/T		
				RxC	V/X		
				TxC	Y/a		

```
Last Command: cnfcldir 3.1 11 input
```

```
Next Command:
```

Table 7-16 cnfcldir-Parameters

Parameter	Description
channel	Specifies the EIA/TIA-232 data channel whose control lead direction to configure.
pin number	Specifies the pin number of the control lead. The valid pin numbers are 11 and 23.
direction	Specifies the direction of the control lead signal. Valid control lead directions are: Input: The control lead acts as an input to the IPX or IGX node. This is the default. Output: The control lead acts as an output from the IPX or IGX node.

cnfdchtp

Configures a CDP, CVM, or LDP or LDM DDS port interface type to OCU or DSU. When configuring DDS operations, this command returns an error if executed on a slot with an EIA/TIA-232 back card. It forces a back card slot from EIA/TIA-232 mode to DDS mode if a back card is not installed and there are no connections. Any Y-cable association is deleted in this case. The clocking tracks the DDS port interface type. OCU type interfaces are configured as “looped”, and DSU type interfaces are configured as “normal”. The default interface is “DSU”.

When configuring CDP, CVM, LDP, or LDM operation, this command configures DCE types as “normal” clocking and DTE types as “looped” clocking. The default type is DCE. For T1 lines, DS0A on T1 unassigned signalling is configurable. When a connection is not present, voice channels are converted to data channels.

Full Name

Configure data channel interface type

Syntax

cnfdchtp <channel> <interface type> [unassigned signaling]

Related Commands

none

Attributes

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

Example 1

```
cnfdchtp 31.1 oc
```

Description

Configure DDS channel 31.1 as OCU.

System Response

```
beta          TRM   YourID:1          IPX 32    9.1    Aug. 15 1997 17:30 MST
```

```
Data Channel: 31.1
Interface:    DDS-4   OCU Config
Clocking:    Looped
```

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
DSR	ON	CTS	ON
DCD	ON		

Last Command: cnfdchtp 31.1 oc

Next Command:

Example 2

```
cnfdchtp 22.1 dce
```

Description

Configure channel 22.1 as DCE with T1 unassigned signalling.

System Response

```
beta          TRM   YourID:1          IPX 32    9.1    Aug. 15 1997 17:30 MST
```

```
Data Channel: 22.1
Interface: Missing   DDS0A DCE Configuration
Clocking: Normal
```

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
DSR	ON	CTS	ON
DCD	ON		

Last Command: cnfdchtp 22.1 dce t

Next Command:

Table 7-17 cnfdchtp–Parameters

Parameter	Description
channel	Specifies the channel to configure in the format <slot>. <port>.
interface type	Specifies the interface type to configure. An LDP or LDM DDS port can be configured as DSU or OCU (enter 'ds' or 'oc'). A CDP or CVM port can be configured as DCE or DTE (enter 'dce' or 'dte').

Table 7-18 cnfdchtp–Optional Parameters

Parameter	Description
channel	Specifies the channel to configure in the format slot. port
unassigned signalling	Specifies an optional parameter for T1 lines to indicate DS0A or T1 unassigned signalling. Enter 'd' for DS0A or 't' for T1.

cnfdclk

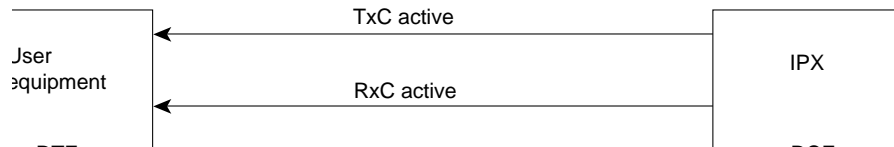
Configures the clocking for a data channel. In general, the clock configuration may be normal, split, or looped for an SDP or HDM (fewer options for an LDP or LDM). The clock configuration of each channel of a connection determines how the clock will be propagated through the network, and how external equipment should be synchronized.

If clocking is not set correctly, there may be no synchronization, and the connection will operate in a plesiochronous mode. Each data port can be configured independently to act as either DCE or DTE by adjusting the jumper (SDI card) or changing the adapter cable (LDI card) on the data interface card. The effect of the clocking type designated depends on whether each data port is configured as DTE or DCE. The following data clocking configurations are possible with the **cnfdclk** command:

DCE-Configured Data Port: Normal Clocking

When the data port is configured as DCE, selecting a clocking type of “n” (for normal) results in clocking as illustrated below. The IPX or IGX node, acting as DCE, provides both the transmit and receive data clocks to the user equipment.

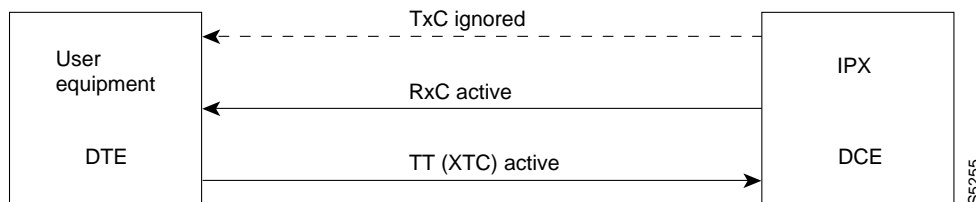
Figure 7-1 Normal Clocking on a DCE



DCE-Configured Data Port: Split Clocking

When the data port is configured as DCE, selecting a clocking type of “s” (for split) results in clocking as illustrated below. In “split” clocking, TT may be generated independently of RxC. The maximum data rate for split clocking is 112 kbps.

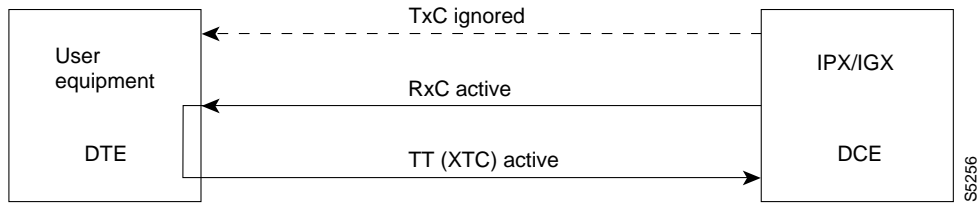
Figure 7-2 Split Clocking on a DCE



DCE-Configured Data Port: Looped Clocking

When the data port is configured as DCE, selecting a clocking type of “l” (for looped) results in clocking as illustrated below. The “Terminal Timing” signal, called TT or XTC, is simply RxC looped back from the user equipment. In this configuration, it is important that the two clocks (RxC and TT) be frequency locked. This clocking configuration is supported for all data rates.

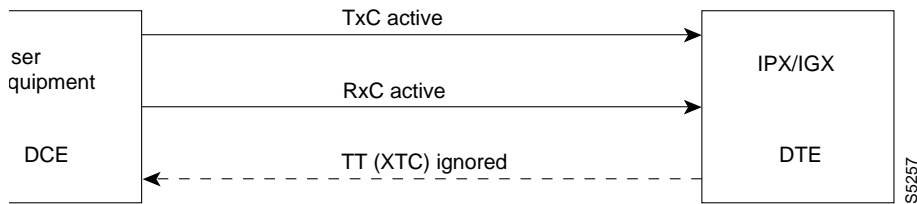
Figure 7-3 Looped Clocking on a DCE



DTE-Configured Data Port: Normal Clocking

When the data port is configured as DTE, selecting a clocking type of “n” (for normal) results in clocking as illustrated below. The IPX node, acting as DTE, receives both the transmit and receive data clocks from the user equipment. When the user equipment is not referenced to the network clock, the maximum data rate for this configuration is 112 kbps. The two clocks must be frequency-locked for proper operation.

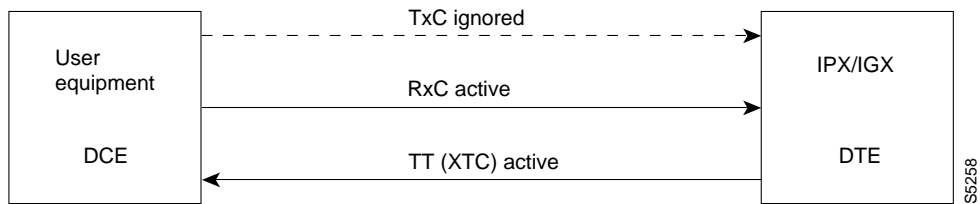
Figure 7-4 Normal Clocking on a DTE



DTE-Configured Data Port: Split Clocking

When the data port is configured as DTE, selecting a clocking type of “s” (for split) results in the clocking as illustrated below. When the user equipment is not referenced to the network clock, the maximum data rate for this configuration is 112 kbps. The two clocks must be frequency-locked for proper operation.

Figure 7-5 Split Clocking on a DTE

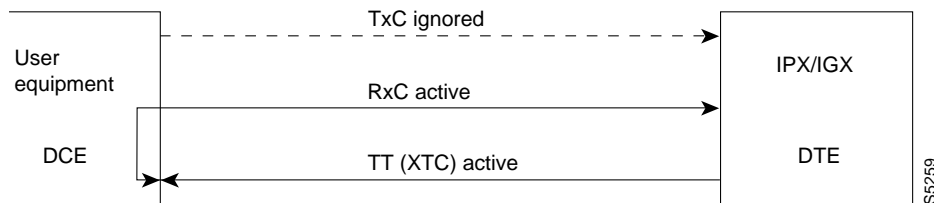


DTE Configured Data Port: Looped Clocking

If you specify clocking type of “l” (looped) when the data port is in DTE mode, the result is the clocking arrangement shown in Figure 7-6. The RxC clock signal is the TT(XTC) signal looped back to the IPX or IGX node by the user equipment. The network supports this clocking configuration for all data rates. The restrictions to the data clocking schemes are:

- Except for special cases, isochronous clocking is limited to data rates of 112 Kbps or less. For higher data rates, all clocks must be frequency-locked to the network.
- For any port there must be only one isochronous clock in a direction. Any situation where user equipment provides two clock signals that are not locked is subject to slippage.
- Slippage may also occur in any situation where there are opposing user clocks for a single direction of data.

Figure 7-6 Looped Clocking on a DTE



Full Name

Configure data channel clocking type

Syntax

cnfdclk <channel> <normal/split/looped>

Related Commands

none

Attributes

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

Example 1

```
cnfdclk 5.1 n
```

Description

Configure the clocking for channel 5.1 to normal.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 23 1997 10:41 PST

Data Channel: 5.1
Interface: V35 DCE
Clocking: Normal

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
RI (J)	OFF	DSR (E)	ON
CTS (D)	ON	TM (K)	OFF
DCD(F)	ON		

Last Command: cnfdclk 5.1 n

Next Command:

Table 7-19 cnfdclk-Parameters

Parameter	Description
channel	Specifies the channel to configure in the format <slot>. <port>.
normal/split/looped	Specifies the clocking type to assign to the channel. Valid clocking types are: <ul style="list-style-type: none">• n for Normal• s for Split• l for Looped

cnfict

Sets the interface control template signals. The signals that can be set using `cnfict` depend on the type of back card used and whether the hardware is configured for DCE or DTE. On an IPX node, the applicable front cards are the SDP, LDP, FRP, CDP (for data), and FTC (for data). On an IGX node, the applicable front cards are the LDM, HDM, FRM, CVM (for data), and FTM (for data). Each data channel has a default interface control template for its active, conditioned, and looped near and far states. The `cnfict` command is used to change a control template. Each interface control lead in each template is individually configured.

When Y-cable redundancy is in effect, the control template configuration for the data channels terminating at the primary slot is also applied to the data channels of the secondary slot. Any configuration information for the secondary slot is ignored. Table 7-20 shows the configurable leads and the equivalence between EIA/TIA-232C, EIA/TIA-232D, EIA/TIA-449, V.35, and X.21 interfaces. The leads are configurable for each type of data interface supported by the IPX or IGX node. The entries under the “IPX/IGX Name” column indicate the abbreviations to use when specifying input or output leads on the command line. A node treats leads impartially for non-interleaved connections. Any signal received on an EIA pin at one end may be transmitted to any pin at the other end, up to the maximum of 12 EIA leads on any interface type. For interleaved EIA connections, refer to the “Fast EIA” column. The column shows which leads are carried in the interleaved bytes of the data packets. All remaining leads are carried in standard control lead packets.

Table 7-20 Configurable Lead Names and Functions

Configurable Leads								
Source	IPX/IGX Name	EIA/TIA-232C	EIA/TIA-232D	EIA/TIA-449	V.35	X.21	Fast EIA	Function
DTE	RTS	CA	CA	RS	C		F4	Request to Send
DCE	CTS	CB	CB	CS	D		F4	Clear to Send
DCE	DSR	CC	CC	DM	E		F3	Data Set Ready
DCE	DCD	CF	CF	RR	F		F7	Data Carrier Detect (RLSD)
DCE	QM	QM	QM					Equalizer Mode
DTE	pin 11	11	11					Sometimes used for Data
DCE	SDCD	SCF	SCF					Secondary Data Carrier Detect
DCE	SCTS	SCB	SCB					Secondary Clear to Send
DTE	STxD	SBA	SBA				F5	Secondary Transmit Data
DTE	NS			NS			F7	New Sync
DCE	SRxD	SBB	SBB				F5	Secondary Receive Data
DCE	DCR	DCR						Divided Receiver Clock
DTE	RL		RL	RL			F6	Remote Loopback
DTE	SRTS	SCA	SCA					Secondary Request to Send
DTE	DTR	CD	CD	TR	H		F3	Data Terminal Ready
DCE	SQ	CG	CG	SQ				Signal Quality Detect
DCE	RI	CE	CE	IC	J**			Ring Indicator
DTE	SF	CH	CH	SF				Signal Rate Select (to DCE)
DCE	SI	CI	CI	SI				Signaling Rate Select. (to DTE)

Configurable Leads

Source	IPX/IGX Name	EIA/TIA-232C	EIA/TIA-232D	EIA/TIA-449	V.35	X.21	Fast EIA	Function
DTE	BSY	BSY		IS			F1	Busy (In Service)
DCE	SB		TST	SB			F1	Test Indicator
DTE	LL			LL			F2	Local Loopback
DCE	TM			TM	K ¹		F6	Test Mode
DTE	SS			SS				Select Standby
DTE	C					C		Control
DCE	I					I		Indicator

1. Applicable to SDP cards only.

Note that pins 11 and 23 on an EIA/TIA-232 port are bi-directional, and their default direction is input. See the **cnfctdir** command for information on changing the direction of these pins. The **cpyict** command can be used to copy an interface control template from one data channel to another. It can then be edited using the **cnfict** command. The **dspbob** command displays the state of leads at specified intervals.

Full Name

Configure interface control templates

Syntax

cnfict <port> <template> <output> <source>

Related Commands

addextlp, dspict, tstport

Attributes

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

Example 1

```
cnfict 31.1 c SB on
```

Description

Configure the conditioned interface control template for channel 31.1 to SB on (DDS).

System Response

```
beta          TRM   YourID:1          IPX 32    9.1    Aug. 15 1997 17:30 MST
```

```
Data Channel:    31.1
Interface:       DDS-4   OCU Config
Clocking:        Looped
```

Interface Control Template for Connection while CONDITIONED

Lead	Output Value	Lead	Output Value
SB	ON	RI	OFF
DSR	OFF	CTS	ON
DCD	OFF		

```
Last Command: cnfict 31.1 c sb on
```

```
Next Command:
```

Example 2

cnfict 25.1 a CTS on

Description

Configure the active interface control template for channel 25.1 to CTS on (EIA/TIA-232).

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 15 1997 17:36 MST

Data Channel: 25.1
Interface: EIA/TIA-232 DCE
Clocking: Normal

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
RI	OFF	DSR	ON
CTS	ON	SRxD	ON
DCR	OFF	DCD	ON
SCTS	ON	SDCD	ON
SQ	ON		

Last Command: cnfict 25.1 a cts on

Next Command:

Example 3

cnfict 5.1 active CTS on

Description

Configure the active interface control template for channel 5.1 to CTS on (V.35).

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 10:29 PST
```

```
Data Channel:    5.1
Interface:       V35   DCE
Clocking:        Normal
```

```
Interface Control Template for Connection while ACTIVE
```

```
Lead   Output Value          Lead   Output Value
RI (J) OFF                DSR (E) ON
CTS (D) ON                 TM (K) OFF
DCD (F) ON
```

```
Last Command: cnfict 5.1 a cts on
```

```
Next Command:
```

Table 7-21 **cnfict-Parameters**

Parameter	Description		
port	Specifies the data channel or frame relay port whose interface control template is to be configured. Entered as <slot.port>. On an IPX node, the applicable cards are the SDP, LDP, FRP, CDP, and FTC. On an IGX node, the applicable cards are the LDM, HDM, FRM, CVM, and FTM.		
template	Specifies which interface control template to configure for the channel and has the format <a/c/l/n/f>. Valid entries are listed below: The only valid template for a frame relay port, X.21 or V.35, is the ACTIVE template. Also, all the output leads have steady state values and do not follow local or remote inputs		
	Entry	Template	Description
	a	Active	The "active" control template is in effect while the data channel is active (normal operation) i.e. when the connection is routed and not failed.
	c	Conditioned	The "conditioned" control template is in effect when conditioning is applied to the data channel. The conditioned template is used when the network detects that it cannot maintain the connection because of card failures or lack of bandwidth (The connection is failed.)
	l	Looped	The "looped" template is in effect when the data channel is being looped back in either direction. The looped template is used when addloclp or addrmtlp has been used to loop the connection within the network.

Parameter	Description
n	Near loopback The “near” template is in effect when running a tsport n command or an addextlp n command on a port. The port is configured such that the external near modem is placed in a loopback.
f	Far loopback The “far” template is in effect when running a tsport f command or an addextlp f command on a port. The port is configured such that the external far-end modem is placed in a loopback.
output	Specifies the output lead. Refer to the Configurable Lead information in the command description for abbreviations. Configurable output leads vary with the type of data interface (EIA/TIA-232, V.35, X.21, or EIA/TIA -449).
source	Specifies how the lead is to be configured and has the format <on off local remote> <input> [delay]. Valid source choices follow: Source Options
on	The output lead is asserted.
off	The output lead is inhibited.
l	(for local) indicates that the output follows a local lead.
r	(for remote) indicates that the output follows a remote lead.
input	Specifies the name of the local or remote input lead that the output lead follows.
delay	Specifies the time in milliseconds that separates the “off” to “on” lead transitions. Delay is valid <i>only</i> when the output lead is CTS and the input lead is local RTS. “On” to “Off” lead transitions are not subject to this delay.

cpyict

Copies all control template information associated with a given channel: the active template information, the conditioned template information, and the looped template information for near and far ends. Once copied, the control template information may be edited with the **cnfict** command. See the **cnfict** command for more information on interface control templates.

On an IPX node, the applicable front cards are the SDP, LDP, FRP, CDP (for data), and FTC (for data). On an IGX node, the applicable front cards are the LDM, HDM, FRM, CVM (for data), and FTM (for data).

Full Name

Copy interface control templates

Syntax

```
cpyict <source_port> <destination_port>
```

Related Commands

cnfict, **dspict**

Attributes

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

Example 1

```
cpyict 25.1 25.2
```

Description

Copy the interface control template for data channel 25.1 to channel 25.2.

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 15 1997 17:40 MST

Data Channel: 25.2
 Interface: EIA/TIA 232 DCE
 Clocking: Normal

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
RI	OFF	DSR	ON
CTS	ON	SRxD	ON
DCR	OFF	DCD	ON
SCTS	ON	SDCD	ON
SQ	ON		

Last Command: cpyict 25.1 25.2

Next Command:

Table 7-22 cpyict-Parameters

Parameter	Description
source channel	Specifies the data channel or frame relay port whose interface control template information to copy.
designating channel	Specifies the data channel or frame relay port that will receive the copied control template information.

delcon

Removes connections from the network. After entry of the channel or range of channels to delete, a prompt requests confirmation of the selection. Connections can be deleted from the node at either end of the connection. Do not delete a connection when the node at the other end of the connection is unreachable. The unreachable node does not recognize the deletion. It is especially important not to delete a connection to an unreachable node and then connect that channel to another node.

Full Name

Delete connections

Syntax

delcon <channel(s)>

Related Commands

addcon, dspcon, dspcons

Attributes

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

Example 1

```
delcon 3.1
```

Description

Delete connection 3.1.

System Response

```
pubsipx1      TN      SuperUser      IPX 16      9.1      Aug. 14 1997 00:53 GMT

Local      Remote      Remote
Channel    NodeName    Channel
3.1        pubsipx1    3.2        Ok      64          7/8
3.2        pubsipx1    3.1        Ok      64          7/8
5.1.101    pubsipx1    5.1.102    Ok      fr
5.1.102    pubsipx1    5.1.101    Ok      fr
5.1.111    pubsipx1    9.1.1      Ok      atfr
5.1.203    pubsipx1    5.1.204    Ok      fst
5.1.204    pubsipx1    5.1.203    Ok      fst
5.1.222    pubsipx1    8.5.2      Ok      atfst
```

```
5.1.223      pubsipx1      8.5.3         Ok      atfst
8.5.1        pubsipx1      5.1.111      Ok      atfr
8.5.2        pubsipx1      5.1.222      Ok      atfst
8.5.3        pubsipx1      5.1.223      Ok      atfst
13.1         pubsipx1      13.2         Failed p
```

This Command: delcon 3.1

Delete these connections (y/n)?

Table 7-23 delcon-Parameters

Parameter	Description
channel	Specifies the data channel or channels to delete. The format is <i>slot.port</i> .

dspchcnf

Displays configuration details for data channels. This command provides information for voice, Frame Relay, ATM, and data channels. For data connections on the specified card and starting with the specified channel, the **dspchcnf** command displays the following information:

- Maximum EIA update rate
- Percentage of channel utilization
- DFM pattern length
- DFM status.(enabled or disabled)

The data cards that support this command are the SDP and LDP on the IPX node and the HDM and LDM on the IGX node.

Full Name

Display channel configurations

Syntax

dspchcnf <start_channel>

Related Commands

cnfchadv, **cnfchdfm**, **cnfchdl**, **cnfcheia**, **cnfchgn**, **cnfchtp**, **cnfchutl**, **cnffrcon**

Attributes

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

Example 1

```
dspchcnf 3.1
```

Description

Display the configuration values for data channels starting at 3.1.

System Response

```
pubsipx1      TN      SuperUser      IPX 16      9.1 Jan. 9 1997 00:04 GMT

Channels      Maximum EIA    %      DFM Pattern   DFM
Update Rate   Util          Length  Status
3.1-4         2            100     8            Enabled
```

Last Command: dspchcnf 3.1

Next Command:

Table 7-24 dspchcnf-Parameters

Parameter	Description
start channel	Specifies the starting channel using the format <i>slot.port</i>

dspcon

Displays connection information for a specified channel. The information displayed includes:

- The channel numbers for both the local and remote ends of the connection.
- The node names at both ends of the connection.
- The routing restriction.
- The class of service (COS) of the connection. For an explanation of COS, see the chapter “Optimizing Traffic Routing and Bandwidth”.
- The connection route listing the end nodes and any intermediate nodes.
- The preferred route for the connection (if configured).
- If cost-based Auto Route is configured, displays maximum and current costs for a connection route.
- The status of the cards associated with the connection.
- Any Y-cable conflicts.
- The compression status (VAD on or off, ADPCM on or off, DFM on or off, frame relay compression on or off).
- The connection descriptor (if configured).

The status that may be displayed includes:

OK	Connection OK
FAILED	Connection failed

Full Name

Display connection

Syntax

dspcon <channel>

Related Commands

cnfchec, cnfrtcost

Attributes

```

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

Example 1

```
dspcon 13.1
```

Description

Display information for data channel 13.1. This connection is FAILED and “off hook.”

System Response

```

pubsipx1      TN      SuperUser      IPX 16      9.1      Aug. 14 1997 00:20 GMT

Conn: 13.1      pubsipx1      13.2      P
Desc: bogus      Status:Failed
    
```

```
Path: Route information not applicable for local connections
```

```
pubsipx1 Line 13: Failed      OFFHK pubsipx1 Line 13: Failed      OFFHK
```

```
Last Command: dspcon 13.1
```

```
Next Command:
```

Table 7-25 dspcon-Parameters

Parameter	Description
channel	Specifies the channel. The command displays connection information for one channel at a time. The format for channel specification is <i>slot.channel</i> .

dspcons

Displays a summary of the connections on an IPX or IGX node. Status that may be displayed includes:

OK	Connection OK
FAILED	Connection failed

Table 7-26 describes the fields in the **dspcons** screens.

Table 7-26 Fields in the dspcons Display

Fields	Description								
Local Channel	The connection's channel at this node.								
Remote Node Name	The name of the node at the other end of the connection.								
Remote Channel	The connection's channel at the remote node.								
State	The state of the connection(s) as follows: <table> <tr> <td>OK</td> <td>Routed</td> </tr> <tr> <td>Down</td> <td>Downed</td> </tr> <tr> <td>OK Downed</td> <td>Waiting for onhook to occur to allow courtesy down to take place for connection(s) that have been courtesy downed using the dncon command.</td> </tr> <tr> <td>Failed</td> <td>Unrouted, but trying</td> </tr> </table>	OK	Routed	Down	Downed	OK Downed	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
OK	Routed								
Down	Downed								
OK Downed	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								
Type	The type of connection (v = voice, d = data, fr = frame relay, atfr = ATM to frame relay interworking, atfst = ATM to frame relay interworking with ForeSight, -fail = failed connections; data rate in kbps for data)								
Route Avoid	The type of lines to avoid when routing (satellite lines, terrestrial lines, lines with zero code suppression).								
Compression	The type of compression applied to the connection (PCM, PCM and VAD, ADPCM, VAD and ADPCM for voice connections), (DFM for data connections).								
COS	The Class Of Service.								
Loopback	A connection with a local loopback is indicated by a right parenthesis symbol between the "Local Channel" and "Remote NodeName" columns. A frame relay connection with a port loopback is indicated by a right bracket symbol between the "Local Channel" and "Remote NodeName" columns. A connection with a remote loopback is indicated by a right parenthesis symbol before the channel number in the "Remote Channel" column.								

Full Name

Display connections

Syntax

dspcons [start_channel] [nodename] [connection type]

Related Commands
addcon, cnfchadv, chfchdfm

Attributes

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

Example 1

dspcons

Description

Display a summary of all connections.

System Response

```
alpha      TRM      YourID:1   IPX 16     Rev:9.1    Aug. 16 1997 09:42 PST
```

Local Channel	Remote NodeName	Remote Channel	State	Type	Compression	Code	Avoid	COS	O
5.1	beta	25.1	Ok	256	7/8	0	L		
9.1	gamma	8.1	Ok	v		0	L		
9.2	beta	19.2	Ok	v		0	L		
14.1	gamma	15.1	Ok	v	VAD	2	L		

Last Command: dspcons

Next Command:

Example 2

dspcons

Description

Display the connection with descriptors.

System Response

```
pubsipx1      TN      SuperUser      IPX 16      9.1      July 25 1997 06:40 PDT

Local         Remote      Remote
Channel       NodeName    Channel       State  Type      Descriptor
5.1.100      pubsipx3    5.1.200      Ok     fr
6.1          pubsipx2    11.1         Ok     56
```

Last Command: dspcons +d

Next Command:

Table 7-27 dspcons—Optional Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. The start channel is specified as follows: slot.channel slot.port.dlci slot.vpi.vci
node name	Specifies that only connections to this remote node from the local node be displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed.
connection type	Specifies that only connections of this type be displayed. If no "connection type" is designated, all connections appear. When you enter the connection type on the command line, precede it with a hyphen (-). Valid connection types to display are: <ul style="list-style-type: none"> -v Displays only voice connections. -d Display only data connections. -f Displays frame relay connections. -abit Shows A-bit (nni) status. -fabit Shows connections with failed A-bit (nni) status. -fail Shows only failed connections.

dsprtcache

New in Release 9.1, this command displays the cache of all cost-based routing connections. The optional 'index' parameter lets you specify a cache entry index. The optional 'c' parameter clears the cache. The information displayed includes:

Full Name

Display cost-based route cache

Syntax

dsprtcache [index] [c]

[index] specifies the cache entry index

[c] specifies to clear the entire cache or a single entry

Related Commands

dsprcon, cnfrtcost, cnfpref

Attributes

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

Example 1

dsprtcache

Description

Display route cache contents, and let you monitor and manually clear the cache.

System Response

```

pissaro TN StrataCom BPX 15 9.1 Jun. 18 1997 11:11 GMT
Route Cache (Summary)
  Index Use # Cost Delay Restrict Load VPC Hops RemoteNode
0 Yes 1 Yes No None VBR No 2 lautrec
1 Yes 6 Yes No *s BDB No 3 vangogh
2 Yes 9 Yes No None BDA No 3 matisse
3 Yes 3 Yes No *t BDB No 3 rousseau
4 Yes 1 Yes No None CBR No 3 seurat <- current
5 No 0 No No None --- No 0 ---
6 No 0 No No None --- No 0 ---
    
```


7	No	0	No	No	None	---	No	0	---
8	No	0	No	No	None	---	No	0	---
9	No	0	No	No	None	---	No	0	---
10	No	0	No	No	None	---	No	0	---
11	No	0	No	No	None	---	No	0	---

Last Command: dsprtcache

Next Command:

Table 7-28 dsprtcache-Parameters

Parameter	Description
index	Specifies a particular route entry within the cache. When used with the c parameter, the route is either displayed or cleared from the cache.
c	Clears the cache, or if you also enter the index parameter, clears the route cache specified by the index number.

dspict

Displays interface control template information for data channels and frame relay ports. Displayed information includes:

- The specified channel.
- The type of template: a, c, l, n, or f.
- The associated output leads and their status:

ON.

OFF.

Following a local input.

Following a remote input.

For frame relay ports, the entire port configuration screen is displayed (see **dspfrport** command). The input being followed, where applicable, is specified. Any RTS to CTS delay is also shown.

Full Name

Display interface control template

Syntax

dspict <port> <template>

Related Commands

cnfict, **cpyict**

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1

```
dspict 25.1
```

Description

Display the active interface control template for 25.1.

System Response

```
beta          TRM  YourID:1          IPX 32    9.1    Aug. 15 1997 17:33 MST
```

```
Data Channel: 25.1
Interface:    EIA/TIA 232  DCE
Clocking:    Normal
```

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
RI	OFF	DSR	ON
CTS	ON	SRxD	ON
DCR	OFF	DCD	ON
SCTS	ON	SDCD	ON
SQ	ON		

Last Command: dspict 25.1

Next Command:

Table 7-29 **dspict-Parameters**

Parameter	Description
channel	Specifies the channel. The format of the channel specification is <i>slot.port</i> .
template	Specifies which control template to display for the channel. There are three templates available for data channels and one available (a only) for frame relay ports. You also specify which end of the circuit. <ul style="list-style-type: none"> a Active control template (normal operation). The only choice for a frame relay port. c Conditioned control template (when connection fails). l Looped control template (with local or remote loopback). n Near. f Far.

prtchcnf

Prints the configuration details for voice channels or data channels. This command uses the same syntax, and prints the same information as the **dspchcnf** command. See the **dspchcnf** description for syntax and output information.

Full Name

Print channel configurations

Syntax

prtchcnf <start_channel>

Related Commands

dspchcnf

Attributes

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

Example 1

```
prtchcnf 14.1
```

Description

Print the configuration values of circuit line 14.1.

System Response

None available as this command produces hardcopy.

Table 7-30 prtchcnf–Parameters

Parameter	Description
start channel	Specifies the channel at which the printout begins. The format is <i>slot.channel</i> .

prtcons

Prints a summary of connections terminated at the IPX or IGX node.

Full Name

Print connections

Syntax

prtcons [start_channel] [nodename] [type]

Related Commands

dspcons

Attributes

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

Example 1

```
prtcons
```

Description

Print a summary of all connections.

System Response

None available as this command produces hardcopy.

Table 7-31 prtcons—Optional Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. The start channel is specified as follows: slot.channel
node name	Specifies that only connections to this remote node from the local node be displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed.

Parameter	Description
connection type	Specifies that only connections of this type be displayed. If no "connection type" is designated, all connections display. When you enter the connection type on the command line, it must be preceded with a hyphen (-). Valid connection types to display are: -v Displays only voice connections. -d Display only data connections. -f Displays frame relay connections. -nni Displays frame relay network to network connections for failed connections only. -fail Displays only failed connections.

prtict

Prints the configuration details for voice channels or data channels. This command uses the same syntax, and prints the same information as is displayed using the **dspchcnf** command. See the **dspchcnf** command for syntax and output information.

Full Name

Print interface control template

Syntax

prtict <port> <template>

Related Commands

cnfict, **cpyict**

Attributes

Privilege	1-2
Jobs	Yes
Log	No
Node	IPX, IGX
Lock	Yes

Example 1

```
prtict 25.1
```

Description

Print the active interface control template for 25.1.

System Response

None as this command produces hardcopy.

Table 7-32 prtict-Parameters

Parameter	Description
channel	Specifies the channel containing the data card. The start channel has the format <i>slot.port</i> .
template	Specifies which control template to display for the channel. Three templates are available for data channels. One template (option "a") is available for frame relay ports. You can also specify the near or far end of the connection. a Active control template (normal operation). This choice is the only option for a frame relay port. c Conditioned control template (when connection fails). l Looped control template (with local or remote loopback). n Near. f Far.

Frame Relay Connections

The Frame Relay commands let you add, configure, delete, and specify statistical reporting for Frame Relay connections. In addition to describing the commands, this chapter tells you how to:

- Set up a Frame Relay connection
- Use Frame Relay classes
- Use interface control templates
- Configure channel utilization
- Set channel priorities
- Display statistics

The Frame Relay commands in this chapter operate on an FRP card set in an IPX node or an FRM or UFM card set in an IGX node. For the Frame Relay commands that operate on an FRSM in an MGX 8220 shelf, refer to the *Cisco MGX 8220 Command Reference*. For the Frame Relay commands that operate on the FastPADs and supporting service cards, refer to the FastPAD manuals.

For a greater number of low-speed connections, the Port Concentrator Shelf (PCS) is available. The PCS is an external device that requires an FRM-2/FRI-2 card set in an IGX node or an FRC-2/FRI-2 in an IPX node. The system recognizes an FRM-2 or FRC-2 and accepts commands for the PCS.

Note A connection is the same as a PVC (permanent virtual circuit).

Physical and Logical Frame Relay Ports

This section describes the command-related issues for physical and logical Frame Relay ports.

In the IPX and IGX nodes, the Frame Relay-only cards are the FRP, FRM and UFM card sets. (The FTM supports Frame Relay, voice, and serial data but is not described in this manual.) In the FRP and FRM, both physical and logical ports can exist. The UFM has *logical* ports and *physical* lines.

Physical and Logical Ports on an FRM

In the FRP and FRM card sets, a *logical* port is a convention that applies to a T1 or E1 back card. In contrast, the ports on an X.21 or V.35 back card are physical. The reason that T1 and E1 ports on an FRP or FRM card set are logical is that these ports utilize one, bi-directional connector. To support the range of possible PVCs, the traffic passes through a de-multiplexer on a T1 or E1 FRI. Therefore, although only one connector exists on the card, the Frame Relay commands accept port numbers 1–24 (T1) or 1–31 (E1). When a Frame Relay command takes the parameter *slot.port*, the port in this case is logical, and the node tracks it accordingly.

Note Keep in mind the distinction between a logical *port* and a logical *channel*: a logical channel is one or more DS0s.

Logical Ports and Physical Lines on a UFM

On the UFI back cards, the presence of multiple physical lines adds a parameter to the connection identifier. When you identify a UFM-C channel, use the format *slot.port line.DS0_range*. Due to the architecture of the software, *port* is a logical specification, and *line* is a physical specification. The range of logical ports is 1–250. The number of physical lines (hardware connectors) on the UFI-8T1 and UFI-8E1 is 8 (regardless of whether the front card is a UFM-4C or UFM-8C). The range of DS0s is 1–24 for T1 and 1–31 for E1.

For interfaces attached to a UFM-U front card, the range of ports is 1–12 for the UFI-12V.35 or UFI-12X.21 and 1–4 for the UFI-4HSSI.

Setting Up a Frame Relay Connection

Frame relay connections can exist between the following cards:

- FRP, FRM, or UFM to any FRP, FRM or UFM.
- UFM to an ASI in a BPX or an ALM/A in an IGX: These paths use service interworking (SIW) to terminate a connection that is Frame Relay at one end and ATM at the other end.
- FRP, FRM, or UFM and an FRSM (in an MGX 8220 shelf): this path uses network interworking (NIW) to carry Frame Relay data encapsulated in ATM cells between an IPX or IGX node and an FRSM.
- FRP, FRM, or UFM to a FastPAD port.

An IPX or IGX node provides a Permanent Virtual Circuit (PVC) Frame Relay Service for interconnecting user-devices (routers, bridges, and packet switches). The PVCs are internally created on the node and rely on FastPacket switching. The user-device connects to the Frame Relay back card in the node. The back card provides the adaptation layer function to convert between the Frame Relay format and the FastPacket format.

In addition to the interface cards just listed, Frame Relay connections require a trunk card. Trunk cards can be an NTC or AIT in an IPX node or an NTM, BTM, or ALM/B in an IGX node. Because Frame Relay is a purchased option, Cisco must enable it on each applicable WAN Switching node.

A variety of external user-devices can operate with an IPX or IGX node. The configuration on these devices must be appropriate for the type of interface on the back card.

The following command sequence brings up a Frame Relay port and adds a Frame Relay connection.

Step 1 Activate a Frame Relay port with the **upfrport** command.

Step 2 Use **cnffrport** to specify the Frame Relay parameters for the Frame Relay service.

An optional command may be applicable to a Port Concentrator Shelf (PCS): you can use **cnffrport** to configure the concentrated link between the PCS and Frame Relay cards.

Step 3 Use the **dspcls** command to view the existing Frame Relay classes. Decide on a class if a suitable class exists, otherwise create a suitable class using the **cnffrcls** command. Use the class number in the **addcon** command.

Step 4 Use the **vt** command to access the node at the remote end of the proposed Frame Relay connection, then use the **upfrport** and **cnffrport** commands as in steps 1 and 2.

Step 5 Use the **addcon** command on the local node to add the Frame Relay connection.

Using Frame Relay Classes

For each Frame Relay connection you add, you must specify a *Frame Relay class*. A Frame Relay class is a set of parameters that specify the bandwidth and congestion-prevention characteristics for a connection. Cisco provides 10 predefined classes, but you can modify any of the 10 Frame Relay classes with **cnffrcls**. To see the parameters in all connection classes, execute **dspfrcls**. A Frame Relay class is relevant only at the time you add a connection with **addcon**. Once the connection exists, the system uses the parameters but does not keep track of the class number.

Apart from using the **cnffrcls** command, you can change one or more Frame Relay parameters with the **addcon** command. When you add a Frame Relay connection with **addcon**, a prompt appears requesting a Frame Relay class. At this prompt you can do one of the following:

- Enter the number of a pre-defined class. The range is 1–10.
- Enter the number of a class modified with the **cnffrcls** command. The range is 1–10.
- Override one or more parameters in a connection class by typing the class number—*without pressing the Return key*—then continue the line by typing either a new value or an asterisk (*) for each parameter. Separate each item with a space and no comma.

If you are overriding class parameters, the asterisk causes the connection to use the existing value of the parameter in that class. Most parameters are bi-directional and have the format *parameter/parameter*. If you want to keep a value for both directions, enter a single *. If you want to change a value for only one direction, enter the parameter in the form **/new_parameter* or *new_parameter/**. When you type individual parameters, you need to enter characters only up to the last changed item. Before the last item, you must enter new values or * as a place holder.

The parameters in the list that follows make up a Frame Relay class. Collectively, the name of these parameters is *frp_bw*. For most parameters, you can specify the value for each direction of the connection, so most parameter names appear in the format *parameter/parameter*. ForeSight (FST) is the exception because ForeSight automatically applies to both directions.

- **MIR/MIR** is defined as `fr_MIR_Tx /fr_MIR_Rx`, where `fr_MIR` is the minimum information rate for the connection. The range for MIR is 2.4 Kbps–2048 Kbps.
- **CIR/CIR** is defined as `fr_CIR_Tx` and `fr_CIR_Rx`, where `fr_CIR` is defined as the committed information rate guaranteed to the user.

The full range of values for Frame Relay cards is 0–2048 Kbps. Note that a CIR of 0 is not a standard setting. The standard range is 2.4 Kbps–2048 Kbps. CIR = 0 is a valid parameter only if the connection terminates at both ends on either a UFM, FRM or FRP. Before you can specify CIR = 0 with either **addcon** or **cnffrcels**, you must enable IDE-to-DE mapping with the **cnffrport** command. If you do not first enable IDE-to-DE mapping, the range for CIR is 2.4 Kbps–2048 Kbps. Additionally, the CIR = 0 specification is necessary at only one end of the connection.

The Port Concentrator Shelf does not support CIR = 0. On the FRP-2 and FRM-2 cards sets, the range for CIR is 2.4 Kbps–2048 Kbps.

- **VC_Q/VC_Q** is defined as `fr_vc_q_Tx/fr_vc_q_Rx`, where `fr_vc_q_Tx` is the transmit VC maximum queue depth. Specify the VC_Q in bytes within the range 1–65535.

OR

Bc/Bc is defined as `fr_Bc_Tx /fr_Bc_Rx`. If you have selected Frame Relay Forum standard parameters (through the **cnfsysparm** command), the Committed Burst (Bc) parameter is used instead of `vc_q`. Bc is defined as the amount of data the network can accept over a variable time interval Tc for committed delivery on a specific PVC. Specify Bc in bytes in the range 1–65535. Bc has meaning for only FST connections. The relationship between Bc and VC_Q is:

$$Bc = VC_Q / ((1 - (CIR/port\ speed)))$$

- **PIR/PIR** is defined as `fr_PIR_Tx /fr_PIR_Rx`, where `fr_PIR_Tx` is the peak transmit rate for the PVC. The PIR range is 2.4–2048 Kbps. You can also specify the value 0 to cause PIR to default to the port speed. Thus, you can modify PIR, leave it the same, or set it to the port speed.

OR

Be/Be is defined as `fr_Be_Tx /fr_Be_Rx`. If you have selected Frame Relay Forum standard parameters (through the **cnfsysparm** command), the PVC uses Excess Burst (Be) instead of PIR. Be is the *amount* of transmit/receive data above the number of bytes set by Bc if enough extra bandwidth is available. Specify Be in bytes within the range 1–65535. Delivery of Be-data is not guaranteed. Be has meaning to only ForeSight. The relationship between Be and PIR is:

$$Be = Bc * ((PIR/CIR) - 1)$$

- **Cmax/Cmax** is defined as `fr_cmax_Tx /fr_cmax_Rx`, where Cmax is the maximum credits the connection can accrue. **Cmax** has the range 1–255 packets per second (pps).
- **ECNQ_thresh/ECNQ_thresh** are the transmit and receive threshold settings for the explicit congestion notification control queues. The range for ECNQ_thresh is 1–65535 bytes.
- **QIR/QIR** is defined as `fr_QIR_Tx /fr_QIR_Rx` where `fr_QIR` is the quiescent information rate for the connection, which is the initial transmit rate after a period of inactivity on the channel. If you do not specify the quiescent receive rate `fr_QIR_Rx`, the system sets it to the transmit value. The values are specified in Kbps and must be in the range MIR–PIR. In addition, you can specify the value 0 to default to the MIR. QIR has meaning for only ForeSight connections.
- **FST** enables or disables ForeSight for a connection. Valid entries are “y” (use ForeSight) or “n” (do not use ForeSight). If the ForeSight status changes, the network reroutes the connection.
- **%utl/%utl** are the percentage transmit and receive utilization settings for the Frame Relay class. This value is specified as a percentage in the range 0%–100%.

Using Interface Control Templates

X.21 ports use a *fixed, active* control template. In contrast, although V.35 and V.28 ports use an active control template, you can set the signals that are active to on or off. These ports cannot use *looped, conditioned, near, or far*.

Configuring Channel Utilization

You can use the **cnfchutl** command to enter the expected channel utilization of a Frame Relay circuit into the system. This command helps the system allocate the proper bandwidth to the circuit.

Setting Channel Priorities

A Frame Relay connection has either low or high priority. The default is low priority. You can use **cnfchpri** to assign a high priority to a circuit or to re-assign a high priority circuit to low priority.

Displaying Statistics

Nodes collect statistics for Frame Relay traffic, channel utilization, and Explicit Congestion Notification. Use **dspchstats** to display these statistics. Use **clrchstats** to clear the statistics and start collecting new statistics. To display Frame Relay usage and error statistics, use **dsportstats**.

Summary of Commands

This table lists the full name and starting page of the description for each Frame Relay command.

Mnemonic	Name	Page
addcon	Add connection	8-7
addfrport	Add Frame Relay port	8-17
clfrportstats	Clear Port Concentrator link statistics	8-19
cnfchpri	Configure channel priority	8-20
cnffrcls	Configure Frame Relay class	8-22
cnffrcon	Configure Frame Relay connection	8-25
cnffrport	Configure Frame Relay port on a Port Concentrator Shelf	8-28
cnffrport	Configure Frame Relay port	8-30
cnfict	Configure interface control template	8-41
cnfmode	Configure mode	8-46
cpyict	Copy interface control template	8-49
delcon	Delete connection	8-51
delfrport	Delete Frame Relay port	8-53
dnfrport	Down Frame Relay port	8-55
dspchcnf	Display channel configuration	8-57
dspchstats	Display channel statistics	8-59
dspcon	Display connection	8-62
dspcons	Display connections	8-64
dspfrels	Display Frame Relay class	8-69
dspfrport	Display Frame Relay port	8-71
dspict	Display interface control template	8-78
dspmode	Display mode	8-81
dspmodes	Display modes	8-84
dsppcs	Display Port Concentrator Shelf	8-86
dspportids	Display port IDs	8-89
dspportstats	Display port statistics	8-91
prtchcnf	Print channel configuration	8-96
prtcons	Print connections	8-99
prtict	Print interface control template	8-101
upfrport	Up Frame Relay port	8-102

addcon

Adds a Frame Relay connection to the network. After you add a connection, the system automatically routes the connection. The node on which you execute **addcon** is the *owner* of the connection. The concept of ownership is important because you must specify automatic rerouting and preferred routing information at the node that owns the connection. See the **cnfpref** and **cnfcos** descriptions for information on automatic rerouting. Before it actually adds the connection, the system displays the parameters you have specified and a prompt for confirmation.

Note For cards with Y-cable redundancy specified, you can add connections to only primary cards.

Each Frame Relay connection (and associated user-device) has a local identification in the form of a unique DLCI. The total range for DLCIs is 1–1023. Typically, DLCIs 16–1007 are available for local and remote channels. According to ANSI standards, DLCIs 1–15 and 1008–1022 are reserved. DLCI 1023 is reserved for LMI signaling.

Only a UFM could come close to using all DLCIs. The maximum number of connections on a UFM is 1000. The maximum number of Frame Relay connections on an FRC or FRM is 252.

If a user-device can automatically determine the network configuration by using the LMI, you do not need to specify the DLCIs in the network to the device. If a device cannot interrogate the network to determine the DLCIs in the network, you must specify the network DLCIs to the user-device.

As the following sections describe, you can generally differentiate Frame Relay connections as *normal*, *bundled*, *grouped*, and *frame forwarding*. In particular, a Frame Relay connection can also terminate at a Frame Relay endpoint or an ATM endpoint if the endpoints have firmware to support this arrangement. A connection that terminates at Frame Relay and ATM endpoints uses service interworking (SIW).

Service Interworking

Frame relay connections that terminate at ATM endpoints require service interworking (SIW) support. At the Frame Relay end, service interworking is one of the optional parameters. The line cards on which you can add service interworking connections are the UFM on an IGX node, ASI on a BPX node, and FRSM in an MGX 8220 shelf. The Frame Relay endpoint has an identifier in the format *slot.port.DLCI*. For SIW connections, the ATM endpoint identifier has the format *slot.port.vpi.vci*.

Note You cannot group or bundle SIW connections with non-SIW connections.

Normal Connections

A *normal* connection is a single PVC. A Frame Relay PVC can terminate at either a Frame Relay endpoint or an ATM endpoint.

Bundled Connections

Connection bundling creates a full mesh of connections between two groups of Frame Relay ports with a single execution of the **addcon** command. When you add a bundle between two groups of ports, you create a connection between each port of one group of ports and each port of the other

group of ports. Each group of Frame Relay ports can include up to four ports. Consequently, the maximum number of connections in a bundle is 16 (resulting from a full mesh of connections between two groups of four ports each). Note that a Port Concentrator Shelf does not support bundling. Characteristics of connection bundling are:

- The number of ports used at each end of the bundle does not have to be the same.
- All of the ports used in a group must be on the same card.
- Only the FRP Model D and the FRM Model D support connection bundles. The UFM does not support connection bundling.
- All of the ports used for a bundle must be contiguous. For example, a bundle on a card may not consist of only ports 1, 3, and 4.
- The syntax for specifying a group of ports for a connection bundle is *slot.port[xport]*.

When you create a connection bundle is created with **addcon**, you do not explicitly specify the required DLCI at each endpoint of each connection. Instead, the DLCIs are automatically assigned using global addressing with the Port IDs, which have been previously assigned to the ports. Consequently, you must first assign a Port ID (other than 0) to every port to which you plan to assign a connection bundle. Use **cnfrport** to assign a Port ID or **dspport** to see an existing Port ID.

For example, the command

```
addcon 6.1x3 alpha 7.2x3 1
```

defines a single connection bundle between a local group of 3 ports (ports 1, 2, and 3 on card 6) and a remote group of 2 ports (ports 2 and 3 on card 7). The resulting connection bundle consists of the following six connections:

```
local node slot 6.port 1 to node alpha slot 7.port 2
local node slot 6.port 1 to node alpha slot 7.port 3
local node slot 6.port 2 to node alpha slot 7.port 2
local node slot 6.port 2 to node alpha slot 7.port 3
local node slot 6.port 3 to node alpha slot 7.port 2
local node slot 6.port 3 to node alpha slot 7.port 3
```

Each connection in the bundle is assigned the parameters of the same Frame Relay class (class 1, in the example above). Notice that no DLCIs were specified for the six connections. The DLCIs are automatically assigned using the Port IDs of the ports.

As an example, assume that the following Port IDs had been previously assigned for the five ports.

```
port 6.1 Port ID = 22
port 6.1 Port ID = 534
port 6.3 Port ID = 487
port 7.2 Port ID = 92
port 7.3 Port ID = 796
```


As a result of the **addcon** command, the six connections that you create are automatically assigned DLCIs using global addressing as follows.

6.1.92 – 7.2.22

6.1.796 – 7.3.22

6.2.92 – 7.2.534

6.2.796 – 7.3.534

6.3.92 – 7.2.487

6.3.796 – 7.3.487

The **dspscons** display shows the entire bundle as a single item. Therefore, you cannot see the automatically assigned DLCIs on the **dspscons** screen. (The automatically assigned DLCIs in the preceding list appear in italics.) To see the DLCIs, use **dspscon**, as in the following example:

dspscon 6.1x3 alpha 7.2x3

The preceding shows one screen for the whole bundle then an additional screen for each connection in the bundle. The assigned DLCIs appear in these individual connection display screens.

Frame Forwarding Connections

A non-Frame Relay data connection (such as HDLC or SDLC) that is routed through Frame Relay cards can bypass a router or take advantage of DFM at higher data rates. The format *slot.port.** identifies a frame forwarding connection. An example is:

addcon 11.2.* alpha 12.3.* 2

The “*” indicates to the node that a DLCI is meaningless.

Maximum Connections Per Port With Signaling Protocols

For any Frame Relay card set that has a maximum frame length of 4510 bytes, the use and type of signaling protocol you may have (optionally) specified with the **cnffrport** command results in a limit on the possible number of connections per physical or logical port. The maximum number of connections per port for each protocol is as follows:

- For Annex A: 899
- For Annex D: 899
- For StrataLMI: 562

The **addcon** command does not prevent you from adding more than the maximum number connections on a port. If the number of connections is exceeded, the particular LMI does not work on the port, the full status messages that result are discarded, and LMI timeouts occur on the port. A port failure results and subsequently leads to a-bit failures in segments of the connection path.

Full Name

Add connection

Syntax

addcon <local_channel> <remote_node> <remote_channel> [con_type] <frame_relay_class | [individual parameters]> [route_avoid]

Note If you request help for **addcon** at the command line prompt, the Help line shows *type* as a parameter. However, when you are *using addcon* for a Frame Relay connection, the *type* shown in the help display is actually the *Frame Relay class* shown on the preceding syntax line and described earlier in the section titled “Using Frame Relay Classes.” As stated in “Using Frame Relay Classes,” you can optionally override any or all of the bandwidth parameters and ForeSight enable in the Frame Relay class by typing the parameters that appear as *frp_bw* and *avoid* in the Help display. See the forthcoming “Optional Parameters” table.

Note also that you do not enter the *coding* parameter shown on the Help line.

Related Commands

delcon, dncon, dspcon, dspcons, upon

Attributes

Privilege	1–2
Jobs	Yes
Log	Yes
Node	IPX, IGX, (and BPX for service interworking)
Lock	Yes

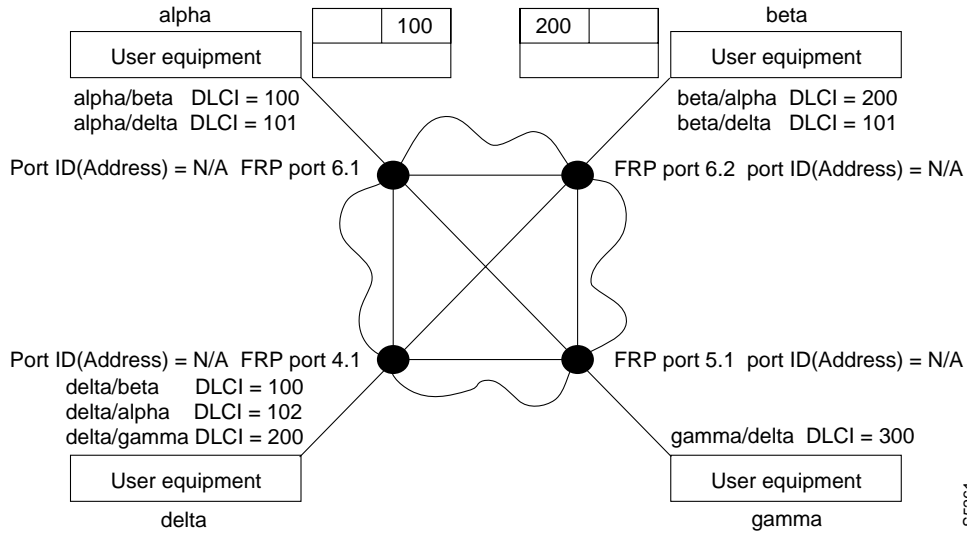
Example 1 (local addressing)

```
addcon 6.1.100 beta 6.2.200 3
addcon 6.1 101 delta 4.1.102 2
addcon 4.1.100 beta 6.2.101 4
addcon 4.1.200 gamma 5.1.300 1
```

Description

Execute the preceding commands at node Alpha to configure the following network.

For the alpha/beta connections



Example 2a

```
addcon 9.1.200 gamma 8.1.300 1
```

Description

Add a connection between the user-device at alpha port 9.1 and the user-device at gamma port 8.1. The user-device at alpha refers to the connection using local DLCI 200. The user-device at gamma refers to this connection using local DLCI 300. The DLCIs have only local significance, so a DLCI must apply to only one connection.

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 10:12 PST

Local  RemoteRemote  Route
Channel NodeName Channel State TypeCCompressionCode  Avoid  COS  O
5.1    beta    25.1    Ok   256 7/8      0  L
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
14.1   gamma  15.1    Ok   v
                                0  L
```

Last Command: addcon 9.1.200 gamma 8.1.300 1

Next Command:

Example 2b

```
addcon 9.1.100 beta 6.2.300 2
```

Description

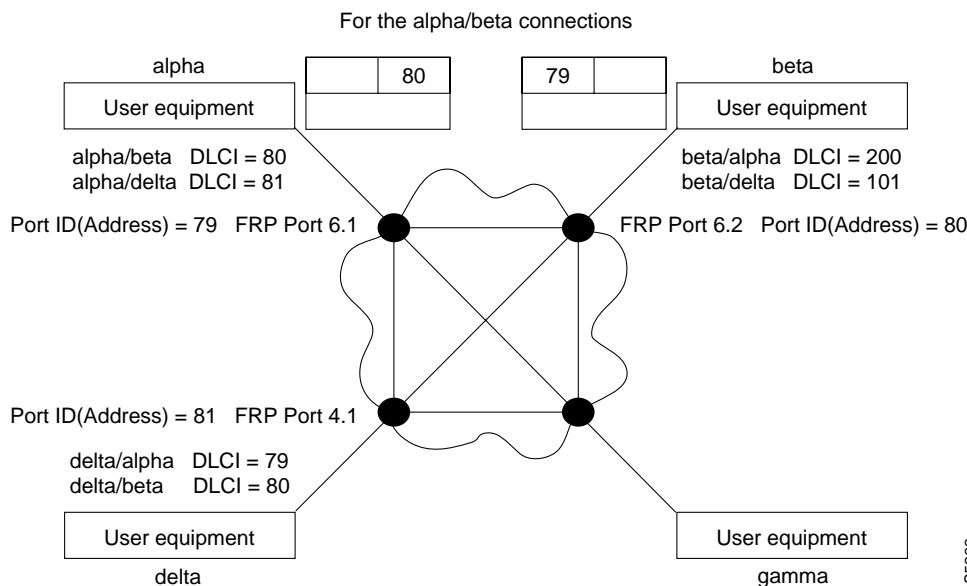
Add another connection at local port 9.1. A DLCI of 100 is used at the local node. A DLCI of 300 can be used at both beta gamma because the DLCIs have only local significance.

Example 3 (global addressing)

```
addcon 6.1.80 beta 9.2.79 2
addcon 6.1.81 gamma 4.1.79 1
addcon 4.1.80 beta 6.2.81 5
```

Description

The network to configure in this example is as the follows:



Example 4 (bundle connections)

```
addcon 8.1x3 alpha 19.2x4 1
```

Description

Add a bundle of connections between Frame Relay ports 8.1-3 on node gamma and 19.2-4 on node alpha. For this bundle, the network routes traffic between gamma port 8.2 and alpha port 19.2.

System Response

```
pubsipx3      VT      SuperUser      IPX 8      9.1 Aug. 3 1997 19:41 GMT

Local        Remote      Remote
Channel      NodeName   Channel      State  Type      Compress  Code COS
8.1x3        alpha      19.2x4      Ok     fr
```

This Command: addcon 8.1x3 alpha 19.2x4 1

Add these connections (y/n)?

Example 5 (frame forwarding)

```
addcon 8.2.* alpha 19.2.* 1
```

Description

Add a frame forwarding connection between the local node's port 8.2 and 19.2 on node alpha.

System Response

```
Local        Remote      Remote      Route
Channel      NodeName   Channel      State  Type      CompressionCodeAvoid  COS  O
6.1          beta       25.2      Ok     256      7/8      0    R
8.1.200     alpha     9.1.100  Ok     fr       0        0    R
8.2.300     beta     19.1.101  Ok     fr       0        0    R
15.1        alpha     14.1      Ok     v        0        0    R
```

This Command: addcon 8.2.* alpha 19.2.* 1

Add these connections (y/n)?

Example 6 (modifying bandwidth)

```
addcon 8.3.101 beta 19.3.201 7 * * * * 30/30 * * Y 80/80
```

Description

Parameters specified by Frame Relay class 7 for this connection are modified by substituting 30 for Cmax in both directions, enabling ForeSight, and reducing percent utilization from 100% to 80%.

System Response

```

gamma          TRM   YourID:1          IPX 16    9.1   Aug. 23 1997 12:10 CST

Local          Remote      Remote          Route
Channel        NodeName    Channel         State  Type   Compression  Code Avoid COS O
6.1            beta        25.2            Ok    256   7/8          0   R
8.1.200        alpha       9.1.100         Ok    fr    0            0   R
8.2.300        beta        19.1.101        Ok    fr    0            0   R
15.1           alpha       14.1            Ok    v     0            0   R
    
```

Last Command: dspcons

Next Command: addcon 8.3.101 beta 19.3.201 7 * * * * 30/30 * * Y 80/80

Table 8-1 addcon-Parameters

Parameter	Description
local channel	<p>Specifies the local channel to connect in the format:</p> <p><i>slot.port.DLCI x port .*</i></p> <p>On an FRP or FRM, the range for <i>port</i> is 1–24 or 1–31. On a UFM-C, the range for <i>port</i> is 1–250. (For connections on a UFM-C, <i>line</i> is not necessary because of the port-to-line mapping through addfrport). For a UFM-U, the range for <i>port</i> is 1–12 for V.35 or X.21 and 1–4 for HSSI. The range for <i>DLCI</i> is 16–1007.</p>
node	<p>Specifies the name of the remote node at the other end of the connection.</p>
remote channel	<p>Specifies the connection at the far end. For Frame Relay termination points, use:</p> <p><i>slot.port.DLCI x port .*</i></p> <p>If the far end is an ATM termination (as in interworking), use:</p> <p><i>slot.port.vpi.vci</i></p> <p>where <i>vpi</i> has a range of 0–255, and <i>vci</i> has a range of 1–4095. One exception to these ranges is the ALM/A, which has a <i>vci</i> range of 0–255. Another exception is an interface shelf (which use Annex G signaling) in a tiered network, as follows:</p> <ul style="list-style-type: none"> • For an MGX 8220 shelf, the range for <i>vpi</i> is 1–1015. For <i>vci</i>, the range is 1–65535. • For an IPX/AF or IGX/AF shelf, the range for both <i>vpi</i> and <i>vci</i> is 1–255. <p>Access devices such as the Cisco 3800 use the following format for the remote channel specification: <i><slot.port> <access_device_connection_ID></i></p> <p>where <i>slot</i> is the slot number of the FTC or FTM card, <i>port</i> is the port number, and <i>access_device_connection_ID</i> is in the range 1–252.</p>

Parameter	Description
Frame Relay class	Specifies a Frame Relay class. Entering a Frame Relay class is a shortcut for specifying bandwidth parameters. You must enter a Frame Relay class, but then you can modify any of the bandwidth parameters specified by the class. To do so, do not press Return after you type the class number but continue typing either a value for the parameter or a * to keep the current value. The system does not display the parameters, but the description of the frp_bw parameters in the "Optional Parameters" table that follows shows the order and ranges of the parameters you can specify. For more details on the parameters and the Frame Relay classes, refer to "Using Frame Relay Classes" earlier in this chapter.

Table 8-2 addcon—Optional Parameters

Parameter	Description						
con_type	Specifies the type of ATM-to-Frame Relay service interworking. (If the connection is Frame Relay-to-Frame Relay, the network selects any necessary interworking.) The possible <i>con_type</i> entries are <i>atft</i> and <i>atfx</i> . To specify service interworking in transparent mode, type "atft." To specify service interworking in translation mode, type "atfx." In translation mode, a standard set of encapsulation protocols are translated. If system software does not recognize an encapsulation protocol for an atfx connection, it generates one of two Frame Relay endpoint statistics: <i>rvFramesDscdUnknownProtocol</i> or <i>xmtFramesDscdUnknownProtocol</i> .						
frp_bw	<p>Optionally specifies individual bandwidth parameters. The parameter name "frp_bw" is the label for the bandwidth parameters described here. The slash (/) between the repeated parameter name shows that you can specify a value for each direction. (FST is the exception.) Two parameters can be either the (default) Cisco versions or the Frame Relay Forum standard parameters. To switch between Cisco and Frame Relay Forum, use the cnfsysparm command. Note that all parameters you select with cnfsysparm are network-wide and not confined to the current connection addition. The switchable parameters are as follows:</p> <table border="0"> <thead> <tr> <th><u>Cisco Parameters</u></th> <th><u>Standard Parameters</u></th> </tr> </thead> <tbody> <tr> <td>PIR (peak information rate)</td> <td>Be (excess burst)</td> </tr> <tr> <td>VC_Q (VC queue depth)</td> <td>Bc (committed burst)</td> </tr> </tbody> </table> <p>When you are using the Cisco parameter set, the names and order of specification are as follows:</p> <p>MIR/MIR, CIR/CIR, VC_Q/VC_Q, PIR/PIR, Cmax/Cmax ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, %utl/%utl</p> <p>When you are using the parameters with the two Frame Relay Forum versions, the names and order of specification are as follows:</p> <p>MIR/MIR, CIR/CIR, Bc/Bc, Be/Be, Cmax/Cmax, ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, %utl/%utl</p> <p>For the definition of each parameter and important information on setting CIR=0, refer to the section titled "Using Frame Relay Classes" earlier in this chapter.</p>	<u>Cisco Parameters</u>	<u>Standard Parameters</u>	PIR (peak information rate)	Be (excess burst)	VC_Q (VC queue depth)	Bc (committed burst)
<u>Cisco Parameters</u>	<u>Standard Parameters</u>						
PIR (peak information rate)	Be (excess burst)						
VC_Q (VC queue depth)	Bc (committed burst)						

Parameter	Description
avoid	Specifies the type of trunk or route to avoid for the connection. The default is no avoidance. To specify an <i>avoid</i> value, type it after the Frame Relay class or — if you override the Frame Relay class — after the frp_bw values. Be sure to include the asterisk (*). The <i>avoid</i> parameters are: *s Avoid satellite trunks. *t Avoid terrestrial trunks. *z Avoid trunks using zero-code suppression techniques that modify any bit position to prevent long strings of zeros.

addfrport

Activates a logical Frame Relay port on a channelized FRP, FRM, or UFM card set. Only T1 or E1 lines carry channelized Frame Relay traffic, so the **addfrport** command does not apply to a Port Concentrator Shelf or front cards with a V.35, X.21, or HSSI interface.

The **addfrport** command adds a logical Frame Relay port by using the slot number of the FRM and the DS0/timeslots that make up the logical port. On a UFM, the logical ports span the whole range of physical lines: you associate the logical ports to the lines as needed, then include the DS0s as the last field of the argument. Table 8-3 lists the error and warning messages for **addfrport**.

Table 8-3 Frame Relay Port Error and Warning Messages

Messages	Reason for Message
"Slot is out of range"	Line number not correct for T1/E1.
"Line must first be upped"	Line is down.
"invalid channel range"	Channel is out of the range 1–24 or 1–31 (16 is a reserved channel for E1).
"Channel is busy"	Channel is already assigned to a logical port.
"You cannot use signaling channel 16" (E1)	CAS channel 16 included in logical port (E1). CCS permits the use of channel 16 but not in all countries.
"Invalid rate"	Entered rate is not 56 Kbps or 64 Kbps.
"This rate is available for single channel only"	Entered rate is 56 Kbps, but multiple channels specified.

Full Name

Add Frame Relay port T1/E1

Syntax

For FRP or FRM card sets: **addfrport** <slot.port> [DS0 channel] [56 | 64]

For UFM-C card sets: **addfrport** <slot.port> <line.DS0_channel>

Related Commands

upln (upcln is the obsolete name), **delfrport**, **cnffrcport**, **cnffrport**, **dspfrport**

Attributes

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

Example 1

```
addfrport 21.9 -15
```

Description

Add a single Frame Relay port that occupies DS0s (timeslots) in the range 9–15. For a T1 line, this channel rate is 7 x 64 Kbps = 448 Kbps, as the screen example shows. The card is an FRP.

System Response

```
gamma          TRM   YourID:1          IPX 16      9.1      Aug. 15 1997 17:28 CST
```

```
Port configuration for FRP 21
```

<u>From</u>	<u>Chan</u>	<u>Speed</u>	<u>Interface</u>	<u>State</u>
1	9-15	448	FRI T1	INACTIVE

```
Last Command: addfrport 21.9-15
```

```
Next Command:
```

Table 8-4 addfrport-Parameters

Parameter	Description
slot.port (FRP or FRM series)	Specifies the FRI T1 or E1 line number and the logical port number. For a UFM-U, specifies the physical slot and port. For an example of a T1 or E1: 8.12 is physical slot 8 and timeslot (or <i>channel</i>) 12.
slot.port line.DS0 channel (for UFM-C series)	For the UFM card sets, this parameter specifies the slot and logical port, the physical line (the connector), and one or more contiguous DS0s. The range of logical ports is 1–250. The range of lines is 1–4 for the UFM-4C and 1–8 for the UFM-8C. Note the space between the port and line.

Table 8-5 addfrport-Optional Parameters

Parameter	Description
- chan	Specifies that multiple DS0/timeslots should form one logical port. A “-” separates the starting and ending DS0s/timeslots). Timeslots must be contiguous. An example is addfrport 8.1-5 . The system uses the lowest DS0/timeslot number as the logical port number and shows this in related displays.
rate	Specifies the rate of a single, logical port. By default, a single logical port (or channel) is 64Kbps. A single DS0 (timeslot) may be 56 Kbps or 64 Kbps. If you do not enter a rate, the default is 64 Kbps.

clrfrcportstats

Clears port statistics for FRM-2 or FRP-2 physical ports connected to a Port Concentrator Shelf. To see the statistics that you clear with **clrfrcportstats**, execute **dspfrcportstats**. The controller card collects statistics from the FRM-2 or FRP-2 once per minute. Because **clrfrcportstats** clears statistics on the controller card, it may not clear statistics generated within the last minute.

Full Name

Clear FRC/FRM port statistics

Syntax

clrfrcportstats <slot.port | *>

Related Commands

dspfrcportstats

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	No

Table 8-6 clrfrcportstats–Parameters

Parameter	Description
slot,port *	Slot and port of the physical port. The range for <i>port</i> is 1–4. An asterisk (*) specifies all FRC-2/FRM-2 physical ports.

cnfchpri

Sets the channel priority for a Frame Relay connection. The Channel Priority feature permits some Frame Relay connections to receive a higher priority within a port queue than other Frame Relay traffic on a per-connection basis. The default priority is low. You can configure Frame Relay LMI ports to communicate the priority to a router. You must change the priority on both ends of a connection.

Note Note that data of high priority (hi-pri) connections is sent to the CPE (customer premises equipment) ahead of data from low priority (low-pri) connections. Note that this parameter has nothing to do with how the connection is routed through the network, but only affects how data is sent to the CPE.

Full Name

Configure Frame Relay channel priority

Syntax

cnfchpri <connection> <priority>

Related Commands

dspchcnf

Attributes

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

Example 1

```
cnfchpri 9.1.100 h
```

Description

Configure a high priority for Frame Relay connection 9.1.100.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 15 1997 16:00 PST

Conn: 9.1.100   gamma      8.1.200   fr
      MIR      CIR      VC Q Depth  PIR      Cmax    ECN QThresh  QIR      FST
      9.6/9.6  9.6/9.6    5/5      256/256  10/10  65535/65535  9.6/9.6  n
% Util: 100/100
Owner: LOCAL  Restriction: NONE  COS: 0          Status: OK
Group: NONE   Priority: H   TestRTD: 0 msec

Path:   alpha  14--13beta  15--15gamma
Pref:   Not Configured

alpha 9.1.100          gamma 8.1.200
FRP:  OK              FRP:  OK
FRI:  OK              FRI:  OK

```

Last Command: cnfchpri 9.1.100 h

Next Command:

Table 8-7 cnfchpri-Parameters

Parameter	Description
channels	Specifies the channel or range of channels. The format is <i>slot.port.DLCI</i> .
h l	The priority: h = high; l = low.

cnffrcls

Configures a system-wide Frame Relay connection class. Refer to the section titled “Using Frame Relay Classes” at the beginning of this chapter for a definition of a Frame Relay class. The following are characteristics of this command:

- Network-wide classes should be configured only when all nodes are reachable.
- Beware of conflicting values with existing, joined networks.
- Changing a class does not affect any existing connections. An altered Frame Relay class affects only connections that are added using the changed class.

Full Name

Configure Frame Relay class

Syntax

```
cnffrcls <class_num> [<BW params>] [<description>]
```

Related Commands

addcon, dspfrcls

Attributes

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

Example 1

```
cnffrcls 1 *
```

Description

Configure Frame Relay class #1 to operate with ForeSight. The list of * parameters leaves those parameters unchanged, and “y” enables ForeSight. Because the utilization and description parameters are not entered, any existing values for these parameters remain in effect.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 15 1997 16:05 PST

Frame Relay Connection Classes

#	MIR	CIR	VC Q Depth	PIR	Cmax	ECN QThresh	QIR	FST
.6/9.6	9.6/9.6	65535/65535	128/128	10/10	65535/65535	9.6/9.6	y	
% Util: 100/100 Description: "Default 9.6"								
2	19.2/19.2	19.2/19.2	65535/65535	*/*	10/10	65535/65535	19.2/19.2	n
% Util: 100/100 Description: "Default 19.2"								
3	16/16	16/16	65535/65535	*/*	10/10	65535/65535	16/16	n
% Util: 100/100 Description: "Default 16"								
4	32/32	32/32	65535/65535	*/*	10/10	65535/65535	32/32	n
% Util: 100/100 Description: "Default 32"								
5	56/56	56/56	65535/65535	*/*	10/10	65535/65535	56/56	n
% Util: 100/100 Description: "Default 56"								

Last Command: cnffrc1s 1 * * * * * y

Continue (y): y

System Response (continued)

alpha TRM YourID:1 IPX 16 9.1 Aug. 15 1997 16:03 PST

Frame Relay Connection Classes

#	MIR	CIR	VC Q Depth	PIR	Cmax	ECN QThresh	QIR	FST
6	64/64	64/64	65535/65535	*/*	10/10	65535/65535	64/64	n
% Util: 100/100 Description: "Default 64"								
7	128/128	128/128	65535/65535	*/*	10/10	65535/65535	128/128	n
% Util: 100/100 Description: "Default 128"								
8	192/192	192/192	65535/65535	*/*	10/10	65535/65535	192/192	n
% Util: 100/100 Description: "Default 192"								
9	256/256	256/256	65535/65535	*/*	10/10	65535/65535	256/256	n
% Util: 100/100 Description: "Default 256"								
10	512/512	512/512	65535/65535	*/*	10/10	65535/65535	512/512	n
% Util: 100/100 Description: "Default 512"								

Last Command: cnffrc1s 1 * * * * * y

Next Command:

Table 8-8 cnfrcls-Parameters

Parameter	Description
class number	Specifies the connection class to configure. The range is 1–10.

Table 8-9 cnfrcls-Optional Parameters

Parameter	Description						
frp_bw	<p>Optionally specifies individual bandwidth parameters. The parameter name “frp_bw” is the label for the bandwidth parameters described here. The slash (/) between the repeated parameter name shows that you can specify a value for each direction. (FST is the exception.) Two parameters can be either the (default) Cisco versions or the Frame Relay Forum standard parameters. To switch between Cisco and Frame Relay Forum, use the cnfsysparm command. Note that all parameters you select with cnfsysparm are network-wide and not confined to the current connection addition. The switchable parameters are as follows:</p> <table border="0"> <thead> <tr> <th><u>Cisco Parameters</u></th> <th><u>Standard Parameters</u></th> </tr> </thead> <tbody> <tr> <td>PIR (peak information rate)</td> <td>Be (excess burst)</td> </tr> <tr> <td>VC_Q (VC queue depth)</td> <td>Bc (committed burst)</td> </tr> </tbody> </table> <p>When you are using the Cisco parameter set, the names and order of specification are as follows:</p> <p style="padding-left: 40px;">MIR/MIR, CIR/CIR, VC_Q/VC_Q, PIR/PIR, Cmax/Cmax ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, %utl/%utl</p> <p>When you are using the parameters with the two Frame Relay Forum versions, the names and order of specification are as follows:</p> <p style="padding-left: 40px;">MIR/MIR, CIR/CIR, Bc/Bc, Be/Be, Cmax/Cmax, ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, %utl/%utl</p> <p>For the definition of each parameter and important information on setting CIR=0, refer to the section titled “Using Frame Relay Classes” earlier in this chapter.</p>	<u>Cisco Parameters</u>	<u>Standard Parameters</u>	PIR (peak information rate)	Be (excess burst)	VC_Q (VC queue depth)	Bc (committed burst)
<u>Cisco Parameters</u>	<u>Standard Parameters</u>						
PIR (peak information rate)	Be (excess burst)						
VC_Q (VC queue depth)	Bc (committed burst)						
description	Any text string up to 25 characters terminated by a <RET>. This is used to provide the user with a descriptive identifier for the class.						

cnffrcon

Configures bandwidth parameters or enables ForeSight for an individual connection. Because you normally specify bandwidth parameters through the Frame Relay class or by the option of overriding bandwidth parameters through specific arguments for **addcon**, using **cnffrcon** tends to be used for instances where a single connection's bandwidth parameters must be customized.

Be sure the MIR you specify is appropriate. If the MIR is too high, bandwidth is wasted. If it is too low, the connection may drop data. The statistics reports are the best source of information to help you determine the appropriate MIR.

The PIR usually is set to the port speed. You can specify a lower PIR if other constraints on the data generation rate exist. Be sure the PIR you specify is appropriate. If it is too low, frames are dropped. If it is too high, bandwidth may be wasted unless the network has ForeSight.

The Cmax, VC Q, and ECN Q values should be changed by only knowledgeable users and when tuning data is available to support the determination of appropriate values. These values affect system buffering resources, so any change from the defaults requires caution. Refer to the *Cisco WAN Switching System Overview* for more details on connection parameters.

If the connection type has ForeSight (FST = y), the result of the last test round trip delay command (Test RTD) is displayed. Note that this is not the current RTD but the result of the last, user-specified test. High or low connection priority is displayed for both standard Frame Relay connections and ForeSight connections.

The node checks the bandwidth parameters to promote efficient use of network bandwidth. The following messages reflect the checks on bandwidth usage.

Error	Min cannot exceed peak.
Warning	Min exceeds this port's speed.
Warning	Sum of mins exceeds port's speed.
Warning	Peak exceeds this port's speed.

Warning messages are informational and do not indicate that the command is failing to execute. Error messages indicate the command is not executing.

When you specify the frp_bw parameters, enter all changes (or unchanged values indicated by an asterisk) on the line. You must specify either a change or a place-holder (*) up to at least the last changed value (after which place-holders are unnecessary). Decide on any changes before starting this command. The parameters section of this command description lists frp_bw parameters. The section "Using Frame Relay Classes" at the beginning of this chapter describes the parameters.

Full Name

Configure Frame Relay Connection

Syntax

```
cnffrcon <channel> [bandwidth_parameters]
```

Related Commands

addcon, **dspcon**

Attributes

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

Example 1

cnffrcon 8.1.200

Description

Configure Frame Relay connection 8.1.200.

System Response

gamma TRM YourID:1 IPX 16 9.1 Aug. 15 1997 17:28 CST

Conn: 8.1.200 alpha 9.1.100 fr
MIR CIR VC Q Depth PIR Cmax ECN QThresh QIR FST
9.6/9.6 9.6/9.6 5/5 256/256 10/10 65535/65535 9.6/9.6 n
% Util: 100/100
Owner: REMOTE Restriction: NONE COS: 0 Status: OK
Group: NONE Priority: L TestRTD: 0 msec

Path: gamma 15--15beta 13--14alpha
Pref: Not Configured

gamma 8.1.200 alpha 9.1.100
FRP: OK FRP: OK
FRI: OK FRI: OK

Last Command: cnffrcon 8.1.200

Next Command:

Table 8-10 cnffrcon–Parameters

Parameter	Description
channel	Specifies the channel to configure connection parameters. The command configures connection information for one channel at a time. You cannot specify a set of channels. The channel has the following format: slot.port.DLCI

Table 8-11 cnffrcon–Optional Parameters

Parameter	Description
bandwidth_parameters	Specifies the bandwidth parameters in the following format: MIR/MIR, CIR/CIR, VC_Q/VC_Q, PIR/PIR, Cmax/Cmax ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, % utl/% utl See “Using Frame Relay Classes” in this chapter for information on the bandwidth parameters. A slash indicates you can specify a value for each direction. FST is either ForeSight enable (y) or disable (n). A “*” is a place-holder for a parameter you do not change.

cnffrcport

Configures the port speed and percent of utilization on the concentrated link of a Port Concentrator Shelf (PCS). This is not a standard command. Primarily, you would use **cnffrcport** to adjust the rate on the concentrated link due to some unusual system configuration.

Because this command applies to the FRC interface (the concentrated link) rather than the user port for the CPE, the port number and the range of speeds is the same as that of the FRP or FRM card. Thus, the port numbers are 1–4 with rates varying from 56 Kbps through 2 Mbps. During port configuration, a prompt for each parameter appears. To keep the current value of the parameter, press the Return key without typing anything.

Full Name

Configure Frame Relay port

Syntax

cnffrcport <slot.port> <percent utilization>

Related Commands

upfrport, dnfrport, dspfrport, dspcd

Attributes

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

Example 1

```
cnffrcport 6.1 512 88
```

Description

Reconfigure PCS port 6.1 to have a speed of 512 Kbps and a concentrated link utilization of 88%. (Note that executing **dspcd** for this slot would show a port count of 44, which indicates that the card set supports a PCS. The Configured Clock of 512 Kbps by itself does not indicate a PCS because a standard FRP-2 or FRM-2 also supports this rate.

System Response

```

minnow          TN      SuperUser      IPX 8      9.1      Aug. 30 1997 10:16 PST

Physical Port: 6.1          [INACTIVE]
Interface:  FRI-X21 DCE          Configured Clock:  512 Kbps
Clocking:   Normal          Measured Rx Clock: 0 Kbps
                                Min Flags / Frames      1

Port ID          1022
Port Queue Depth 65535      OAM Pkt Threshold  3 pkts
ECN Queue Threshold 65535      T391 Link Intg Timer 10 sec
DE Threshold     100 %      N391 Full Status Poll 6 cyl
Signalling Protocol None      EFCI Mapping Enabled No
Asynchronous Status No      CLLM Enabled/Tx Timer No/ 0 msec
T392 Polling Verif Timer 15      IDE to DE Mapping Yes
N392 Error Threshold 3      Interface Control Template
N393 Monitored Events Count 4      Lead I
Communicate Priority No      State ON
Upper/Lower RNR Thresh 75%/ 25%      Concentrated Link Util 88%

Last Command: cnffrcport 6.1 512 88

Next Command:

```

Table 8-12 cnffrcport-Parameters

Parameter	Description
slot.port	Specifies the card slot and port number. Because the port number is that of the concentrated link rather than the user port number, the range is 1-4 (not 1-44).
speed	Specifies the port clock speed for a 2.0 Mbps FRP-2 or FRM-2. The display shows the <i>configured</i> speed as Configured Clock and the <i>actual</i> speed as Measured Rx Clock. The available speeds are: 1 port (selected speeds, 56-2048 Kbps) 2 ports (selected speeds, 56-1024 Kbps) 3 ports (selected speeds, 56-672 Kbps) 4 ports (selected speeds, 56-512 Kbps)
utilization	Specifies the percent of utilization of the concentrated link.

cnffrport

Configures the parameters of a Frame Relay port. The **cnffrport** command applies to the UFM/UFI, FRP/FRI, FRM/FRI, and FRM-2/FRP-2. (Note that a less commonly used command also exists for the concentrated link between the PCS and FRM-2 or FRP-2: **cnffrcport**.)

During port configuration, a prompt for each parameter appears. To keep the current value of the parameter, press the Return key without typing any characters. When a parameter is not configurable for an application, the parameter appears shaded or with dashed lines. You can mix the data rate for each of the ports if the total for all ports does not exceed the maximum composite data rate that the card set supports. Table 8-13 shows the supported data rates for individual T1 and E1 lines.

Table 8-13 T1 and E1 Data Rates

Data Rates at 56 Kbps Increments				Data Rates at 64 Kbps Increments			
56	112	168	224	64	128	192	256
280	336	392	448	320	384	448	512
504	560	616	672	576	640	704	768
728	784	840	896	832	896	960	1024
952	1008	1064	1120	1088	1152	1216	1280
1176	1232	1288	1344	1344	1408	1472	1536
1400	1456	1512	1568	1600	1664	1728	1792
1624	1680	1736	1792	1856	1920	1984	2048

Regarding E1 limits, you cannot add slots 0–31, that is, you cannot have a port at E1 speed. The maximum you can get is 31 slots (1984) using CCS since slot 0 is used for FAS, etc.

Table 8-14 shows the available data rates on a single, PCS user-port. For the FRP-2 and FRM-2 cards, the maximum composite data rate over the 44 logical, user-ports is 1.792 Mbps.

Table 8-14 PCS Data Rates

Data Rates in Kbps							
9.6	14.4	16	19.2	32	38.4	48	56
64	112	128	168	192	224	256	280
320	336	384					

For a PCS, some additional rules for assigning data rates to the 44 ports apply:

- No single user-port should have a speed greater than 384 Kbps.
- The total for each group of 11 ports should not exceed 448Kbps. The software allows higher rates, but the system may drop data if user-equipment passes data above the aggregate total of 448 Kbps.
- The port numbers for the 11-port groups are 1–11, 12–22, 23–33, and 34–44.

Signaling Protocol Timers

This section introduces the implementation of two signaling timers and related parameters you can specify through the **cnffrport** command.

Periodically, devices use *signaling* to request the status of other, connected devices or networks. The signaling can be a simple confirmation of the other device's existence or more detailed information, such as the DLCIs, bandwidth, and state of all PVCs. The signaling described here occurs between:

- The user-equipment and a frame-relay port across the user-to-network interface (UNI)
- Frame relay ports in the network across the network-to-network interface (NNI)

Periodically, Frame Relay ports within the network transmit a Status Enquiry and wait for a Status response. These exchanges occur across the UNI and the NNI. At the UNI, the user-equipment periodically sends a series of Status Enquiries and awaits a Status response for each enquiry. At the NNI of any network, a Frame Relay port can generate Status Enquiries and, at alternate times, receive Status Enquiries. In this way, the signaling between networks mirror each other. (Figure 8-1 shows the three possible exchanges.) The timers for Status Enquiry and Status response and other, related parameters are the:

- *Link integrity timer*—the time period between each Status Enquiry that either the user-equipment or a Frame Relay port in the network generates
- *Polling verification timer*—a time period in which a Frame Relay port waits for a Status response to a Status Enquiry that the port generated
- *Error threshold*—the number of missing or erroneous events that triggers a Port Communication Failure
- *Monitored events count*—the number of events in a polling cycle
- *Full status polling cycle*—a polling cycle in which the port that has sent the Status Enquiry waits for detailed status information

In the preceding list, an *event* is either a Status Enquiry or a Status response. The meaning of the event depends on whether the link integrity timer or the polling verification timer is waiting for the event. The link integrity timer waits for *Status responses*. The polling verification timer waits for *Status Enquiries*.

Most Status Enquiries contain only a sequence number. After sending these simple Status Enquiries, the polling device checks for the sequence number. Periodically, a *full status polling cycle* takes place, in which the polling device waits for all applicable information, such as the status of all connections that cross the NNI. For signaling across the UNI, the Frame Relay Forum has recommended a full status polling cycle at every sixth polling cycle. The Frame Relay Forum has not recommended a frequency for the NNI. The **cnffrport** command lets you select a frequency in the range of once every 1–10 polling cycles.

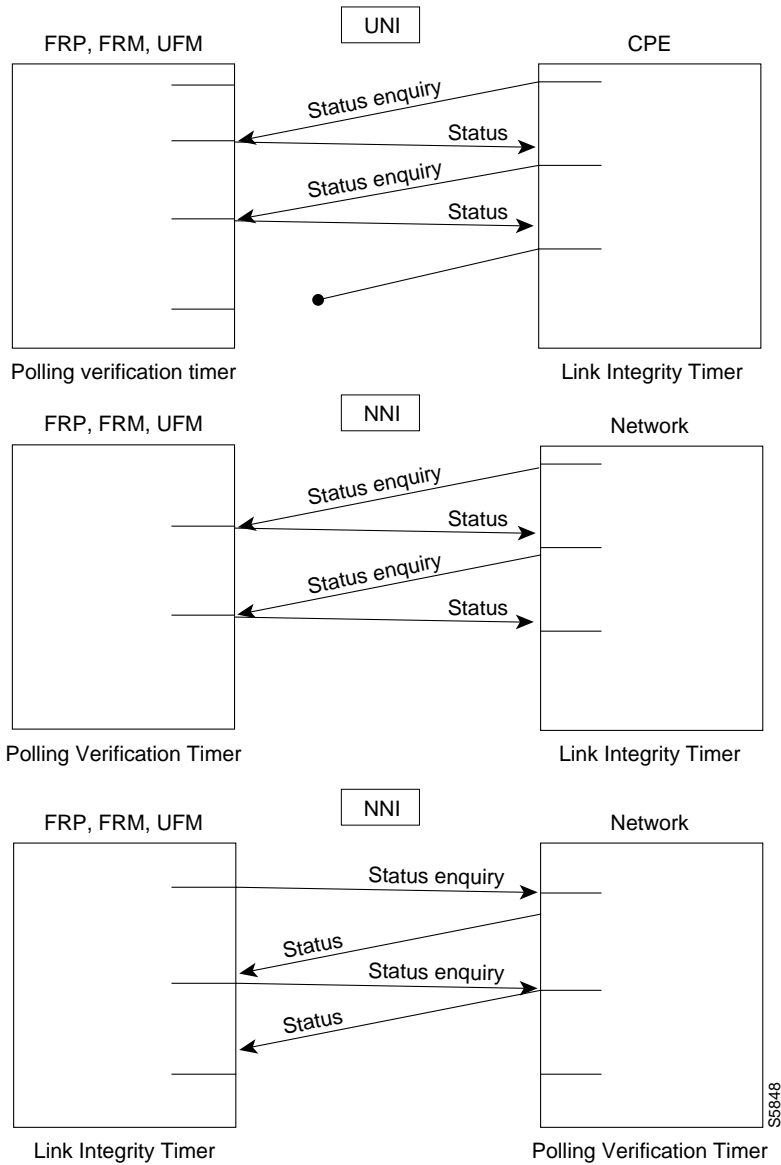
The Frame Relay port or user-device counts a user-specified number of errors out of a user-specified number of attempts before it signals a Port Communication Failure. These parameters are the *error threshold* and the *monitored events count*, respectively. The defaults for these parameters are 3 and 4, respectively. To use the defaults in an example: if 3 out of 4 events are either missing or erroneous within the specified time period, the port signals a Port Communication Failure (a minor alarm).

An event has a user-specified amount of time to arrive. The allowed time period for the arrival of a valid event is the number of seconds you assign to a timer. If an enquiry or response is missing or bad within the timer value, the event is failed. Again, using all default values in an example: if the polling verification timer is 15 seconds and no Status Enquiry arrives within that time, the port records a missing Status Enquiry. If no Status Enquiry arrives during the next two 15-second periods,

the port signals a Port Communication Failure. In the UNI example in the figure, the third Status Enquiry does not arrive. Note that each time a Status Enquiry arrives, the polling verification timer restarts counting at 0 seconds rather than waiting until the specified number of seconds has elapsed.

Whether the port is on a UNI or NNI, the polling verification timer setting must be longer than the link integrity timer. (Refer to the forthcoming **cnffrport** parameters table for values.) You cannot set the link integrity timer for the user-equipment with **cnffrport**. Usually, the link integrity timer on user-equipment is 10 seconds, which you can verify by executing **dspportstats** and counting the number of seconds between statistical updates. On the NNI, you can set both timers (they use either Annex A or Annex D).

Figure 8-1 Signaling Protocol Timing



The 1 Mbps FRI

The data rates available with the 1 Mbps FRI are as follows:

Table 8-15 Data Rates for the 1-Mbps FRI

Port Data Rates in <i>Kbps</i> for 1Mbps FRI			
1024	512	256	128
896	448	224	112
768	384	192	64
672	336	168	56

The rules for assigning data rates to the four ports when using the 1 Mbps FRI are as follows:

- If you assign a data rate of 672 Kbps or higher on any port, you cannot use any other port.
- If you assign a data rate of between 384 Kbps and 512 Kbps to any port, you can specify a second port with an available data rate of 512 Kbps or less.
- If you assign a data rate of 336 Kbps to any port, you can specify two other ports for any available data rates of 336 Kbps or less.
- If the data rate of any port does not exceed 256 Kbps, you can specify all four ports with any available data rates of 256 Kbps or less.

Full Name

Configure Frame Relay port

Syntax (T1/E1 ports on UFM-C)

```
cnffrport <slot.port> <line.DS0_range> <port queue depth> <ecn queue threshold>
<de threshold> <signaling protocol> [protocol parameters]
```

Syntax (Unchannelized ports on UFM-U)

```
cnffrport <slot.port> <port type> <port queue depth> <ecn queue threshold>
<de threshold> <signaling protocol> [protocol parameters]
```

Syntax (T1/E1 ports on FRM or FRP)

```
cnffrport <slot.port> <port queue depth> <ecn queue threshold> <de threshold>
<signaling protocol> [protocol parameters]
```

Syntax (All other ports—for an FRM or FRP)

```
cnffrport <slot.port> <speed> <port queue depth> <clocking> <de_threshold>
<min-flags-bet-frames> <ECN q_threshold> <port ID> <signaling protocol y/n>
[protocol parameters]
```

Related Commands

addfrport, upfrport, dnfrport, dspfrport

Attributes

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

Example 1

```
cnffrport 3.1 48000 48000 100 n N Y 1
```

Description

Change Frame Relay port 3.1 to have queue depths of 48000. The interface in this example is a T1.

System Response

```
pubsigx1      TN      SuperUser      IGX 32      9.1      Sep. 10 1997 16:25 GMT

Port:         3.1          [ACTIVE ]
Interface:    FRI-T1          Configured Clock:    64 Kbps
Clocking:     None          Measured Rx Clock:  None
Min Flags / Frames      1
Channel Range           1
Port ID                 -
Port Queue Depth        48000
ECN Queue Threshold     48000
DE Threshold            100 %
Signalling Protocol     None
Asynchronous Status    No
T392 Polling Verif Timer 15
N392 Error Threshold    3
N393 Monitored Events Count 4
Communicate Priority     No
Upper/Lower RNR Thresh 75%/ 25%

Last Command: cnffrport 3.1 48000 48000 100 n N Y 1

Next Command:
```

Example 2

```
cnffrport 5.1 256 n 12000 10000 100 a N N 15 3 4 3 y y 100 Y 1
```

Description

Change queue depths for port 8.1. An explanation of the screen appears after the screen example.

System Response

```

padma          VT      SuperUser      IPX 8      9.1      Sep. 10 1997 16:39 GMT

Port:          5.1          [ACTIVE ]
Interface:     FRI-V35 DCE          Configured Clock: 256 Kbps
Clocking:     Normal          Measured Rx Clock: 256 Kbps
                                   Min Flags / Frames      1

Port ID                0
Port Queue Depth      12000      OAM Pkt Threshold      3 pkts
ECN Queue Threshold   10000      T391 Link Intg Timer   10 sec
DE Threshold          100 %      N391 Full Status Poll  6 cyl
Signalling Protocol   Annex A UNI      EFCI Mapping Enabled   Yes
Asynchronous Status   No          CLLM Enabled/Tx Timer  Yes/100 msec
T392 Polling Verif Timer  15      IDE to DE Mapping      Yes
N392 Error Threshold   3          Interface Control Template
N393 Monitored Events Count  4          Lead CTS DSR DCD
Communicate Priority    No          State ON ON ON
Upper/Lower RNR Thresh 75%/ 25%

Last Command: cnffrport 5.1 256 NORMAL 0 12000 10000 100 a N N 15 3 4 3 y y 100
Y 1

Next Command:

```

The screen in Example 2 shows the following:

- Port Speed (configured, measured) 256 Kbps The screen displays both the configured clock speed and the measured clock speed—256 Kbps for both in this case.
- Clocking (type) Normal Of the two clocking types, the interface uses normal clocking.
- Port ID 0 The optional Port ID has not been specified.
- Port Queue Depth 12000 Depth of port queue is set at 12000 bytes.
- ECN Queue Depth 10000 Port queue must reach 10000 bytes before FECN and BECN bits are set.
- DE Threshold 100 Port buffer must be 100% full before DE frames are dropped.
- Signaling Protocol Annex A The selected protocol for the UNI.
- Asynchronous Status N No asynchronous messages to user-device; wait for polling from user-device.
- Polling Verify Timer 15 15 seconds heartbeat period.
- Error Threshold 3 3 failures trigger port communication failure.
- Monitored Events Count 4 4 events are monitored.
- Communicate Priority N Do not communicate port priority to user-device.
- Upper RNR Threshold 75 75% of buffer capacity triggers receiver not ready condition.
- Lower RNR Threshold 25 25% of buffer capacity clears a receiver not ready condition.
- Minimum Flags/Frame 1 One flag exists for each FR data frame.

Example 3

cnffrport 13.1

Description

Configure the parameters for the newly upped V.35 port at 13.1. In this case, the only change is the port type: the interface becomes a DTE in this example.

```

swl80          TN      SuperUser      IGX 16      9.1 July 30 1997 00:09 GMT
Port:          13.1      [ACTIVE  ]
Interface:     V35      DCE
Clocking:      Normal
Configured Clock: 256 Kbps
Measured Rx Clock: 0 Kbps

Port ID                0          Min Flags / Frames          1
Port Queue Depth       65535      OAM Pkt Threshold          3 pkts
ECN Queue Threshold    65535      T391 Link Intg Timer       10 sec
DE Threshold           100 %     N391 Full Status Poll      6 cyl
Signalling Protocol    None       EFCI Mapping Enabled       No
Asynchronous Status    No        CLLM Enabled/Tx Timer      No/ 0 msec
T392 Polling Verif Timer 15        IDE to DE Mapping          Yes
N392 Error Threshold   3         Interface Control Template
N393 Monitored Events Count 4         Lead   CTS   DSR   DCD
Communicate Priority    No        State  ON   ON   ON
Upper/Lower RNR Thresh 75%/ 25%

Last Command: cnffrport 13.1 DTE 256 NORMAL 0 65535 65535 100 n N N Y

Next Command:
    
```

Note The following table describes both mandatory and optional parameters because some parameters are mandatory for T1/E1 lines and optional for other line types.

Table 8-16 cnffrport-Parameters

Parameter	Description
slot.port	Specifies the logical port on the FRP, FRM, or UFM-U in the format <i>slot.port</i> . For a T1/E1 line on an FRM or FRP, port is a logical number. For a UFM-C, the range for port is 1–250. (See the description of <i>slot.port line</i> in the <i>Cisco IGX 8400 Series Reference</i> manual.) For a Port Concentrator Shelf, <i>port</i> is to the logical port in the range 1–44.
port type (for a UFM-U) For <i>port type</i> on a PCS, see next box.	Specifies whether a port on a UFM-U is DCE or DTE. The prompt appears if the system detects a UFM-U. The default is DCE. For an FRM or FRP, “port Type” is display-only because jumper blocks on the back cards set the mode. When you use cnffrport in a job, the “Enter mode (line or port)” prompt follows <i>slot.port</i> . Note that this <i>mode</i> is the interface type of the Frame Relay port rather than the mode of the UFM-U. Valid entries are HSSI, V35, X21, PORT (PORT is generically “unchannelized”), or LINE (LINE indicates T1 or E1). If the front card is a UFM-U, a subsequent prompt asks you to specify DCE or DTE.
port type (for a PCS) (For port type on a UFM-U, see preceding box.)	<i>Port type</i> for a PCS tells switch software whether the port is V.35, V.11 or V.28. <i>Port type</i> for a PCS does not actually configure the port: to configure the port, you must install the appropriate card in the PCS. See the <i>port type</i> description for the UFM-U for information on cnffrport in a job.

Parameter	Description
interface type	Specifies an interface type for a Port Concentrator Shelf (PCS). This parameter appears if switch software detects a PCS. It applies to the user interface display only and not the PCS itself because system software does not detect the interface type within the PCS. To change the user-interface type, you must change a card in the PCS.
slot.port line	Specifies the UFM-C slot, port, and line number, where <i>port</i> can be 1–250, and <i>line</i> can be 1–8. Note that the maximum number of T1/E1 lines per node is 32. This maximum could be, for example, spread over 4 UFM-8C card sets that utilize all 8 lines on each back card.
speed	<p>Specifies a port clock speed in Kbps for a 2.0 Mbps UFM, FRP, or FRM. The <i>configured</i> speed appears under the Configured Clock heading. The <i>actual</i> clock rate appears under the Measured Rx Clock heading. Note that this option does not apply to T1/E1 lines because these line types use 64 or 56 Kbps timeslots. The range of speeds according to the number of active ports is as follows:</p> <ul style="list-style-type: none"> • 1 port (selected speeds, 56–2048 Kbps) • 2 ports (selected speeds, 56–1024 Kbps) • 3 ports (selected speeds, 56–672 Kbps) • 4 ports (selected speeds, 56–512 Kbps) <p>Refer to the table at the beginning of this command description for the available clock rates for all port combinations.</p>
clocking	<p>Specifies the port's clock type for HSSI, V.35, and X.21 lines. <i>Clocking</i> does not apply to T1, E1, or Port Concentrator lines. The clock is either <i>normal</i> or <i>looped</i>. Four combinations of clocking are available for the V.35 ports. Two combinations of clocking are available for HSSI and X.21. Note that the clock and data direction in DCE mode is the opposite of the direction for DTE mode. The possibilities are:</p> <ul style="list-style-type: none"> • FRP, FRM, or UFM-U port is DCE with normal clocking (HSSI, V.35, X.21). • FRP, FRM, or UFM-U port is DCE with looped clocking (V.35 only). • FRP, FRM, or UFM-U port is DTE with normal clocking (HSSI, V.35, X.21). • FRP, FRM, or UFM-U port is DTE with looped clocking (V.35 only). <p>For a description of looped and normal clocking, refer to the <i>Cisco IGX 8400 Series Reference</i> manual, the <i>Cisco IPX Reference</i> manual, or the <i>Cisco WAN Switching System Overview</i>.</p>
port ID	Specifies the DLCI associated with the port (0–1024) {0}. A node uses this number when you add bundled connections. Otherwise, port ID can be used as a network destination number in global addressing. The <i>port ID</i> does not apply to T1, E1, or PCS ports.
port queue depth	Specifies the maximum bytes in the transmission queue at the UFM, FRP, or FRM port. The range is 0–65535 bytes. The default is 65535 bytes.
ecn queue threshold	Specifies the threshold at which the system begins to generate explicit congestion notification (BECN and FECN bits) for the port. The range is 0–65535 bytes. The default is 65535 bytes.
de threshold	Specifies the port queue depth above which the system discards frames with a set Discard Eligibility (DE) bit. The range is 0–100%. The default is 100%. A threshold of 100% disables DE for the port because a queue cannot contain more than 100% of its capacity.

Parameter	Description
signaling protocol	<p>Specifies the LMI operation mode. The first time you execute cnffrport on a port, the command line interface displays the following options for this parameter: “none, Strata LMI, a (for Annex A), and d (for Annex D).” If you enter “a” or “d,” the subsequent prompt asks if the interface is NNI.</p> <p>For the <i>initial</i> port specification and <i>subsequent</i> port specifications for a particular port, you can also use a single digit from the LMI definition list that follows. The total industry standard range is 0–255, but Cisco WAN Switching nodes recognize only the following (the default is internally recognized as LMI=2):</p> <p>LMI = 0 LMI is disabled at this port.</p> <p>LMI = 1 Cisco LMI and the asynchronous update process is enabled at this port. Greenwich Mean Time is also enabled.</p> <p>LMI = 2 LMI is disabled at this port.</p> <p>LMI = 3 Cisco LMI is enabled at this port, but asynchronous update process is disabled.</p> <p>LMI = 4 The port configuration is UNI using CCITT Q.933 Annex A parameters.</p> <p>LMI = 5 The port configuration is UNI using ANSI T1.617 Annex D parameters.</p> <p>LMI = 6 The port configuration is NNI using CCITT Q.933 Annex A parameters.</p> <p>LMI = 7 The port configuration is NNI using ANSI T1.617 Annex D parameters.</p> <p>For any Frame Relay card set that has a maximum frame length of 4510 bytes, the use and type of a signaling protocol results in a limit on the possible number of connections per port (the port here is either physical or logical). The maximum number of connections per port for each protocol is as follows:</p> <p>For Annex A: 899 For Annex D: 899 For StrataLMI: 562</p> <p>Neither addcon nor cnffrport prevents you from adding more than the maximum number of connections on a port. (You might, for example, use cnffrport to specify an LMI when too many connections for that particular LMI already exist.) If the number of connections is exceeded for a particular LMI, the LMI does not work on the port, the full status messages that result are discarded, and LMI timeouts occur on the port. A port failure results and also subsequently leads to a-bit failures in other segments of the connection path.</p>
asynchronous status	Specifies whether the node should send unsolicited LMI update messages when they appear or wait for the user-device to poll. Enter y (yes) or n (no).
polling verify timer	Specifies a Link Integrity Verification Timer heartbeat (keep-alive) period. The range is 5–30. The default is 15. Set the timer to 5 secs. more than the setting in the user equipment.
error threshold	Specifies the number of failures in the monitored events that cause the “keep alive” process to report an alarm. The theoretical range is 0–255. The valid range is 1–10. A threshold of 0 reverts to 1. A threshold greater than 10 reverts to 10.
monitored events count	Specifies the number of monitored events for the “keep alive” process. It has a theoretical range of 0–255 and a valid range of 1–10. A port communication-fail condition is cleared after this number of successful polling cycles. A value of 0 reverts to 1, and a value more than 10 reverts to 10.

Parameter	Description
communicate priority	Specifies whether the system should communicate the SNA priority of the connections to the user-device on the port. Enter y (yes) or n (no). (SNA priority is either H or L.)
upper/lower RNR threshold	Specifies the <i>receiver not ready</i> (RNR) thresholds. The upper threshold is the number of receiver not ready indications from the user equipment before an alarm is generated for this port. The lower RNR threshold is the number of indications from the user equipment before an alarm is cleared. The range is 1–255. The default for the upper RNR threshold is 75. The default for the lower RNR threshold is 25.
Enable EFCI to BECN mapping	Directs the system to map the ForeSight congestion bit (which is set in the FastPackets by a trunk card) to the FECN and BECN bits on the affected PVC.
ForeSight over port	Specifies whether the system should use CLLM over the port.
min. flags/frame	Specifies the minimum number of flags between frames when the direction of transmission is from the node to the user-equipment. Any value greater than 0 is valid on the UFM, FRP or FRM. The default is 1. On a Port Concentrator Shelf, the range is 1–16.
OAM FastPacket threshold	<p>Specifies how many OAM FastPackets must arrive from a remote NNI port before the local port generates “A-bit = 0” in the signaling protocol message to the locally attached device. The range for this parameter is 0–15 packets. The default is 3 packets. A 0 disables this function. The <i>OAM FastPacket threshold</i> setting applies to UNI and NNI ports. The following two paragraphs provide a more detailed explanation of the A-bit and <i>OAM FastPacket threshold</i> usage.</p> <p>On any Frame Relay port (UNI or NNI) that is using a signaling protocol (Cisco LMI, Annex A, or Annex D), the FRP or FRM provides a Status message to the attached equipment in response to a Status Enquiry message or as an Asynchronous Update. These Status messages contain details about every PVC configured on the port. In particular, the “PVC Active” bit (the A-bit) represents whether a PVC is active (A-bit=1) or out of service (A-bit = 0). If the other end of the connection PVC on a UNI port, the only conditions that can cause the local Frame Relay card to send an A-bit=0 are:</p> <ul style="list-style-type: none"> • The PVC being “down” (intentionally taken out of service) • The PVC being failed for any reason (such as a hardware failure, trunk failure with no ability to reroute, and so on) <p>If the other end of the PVC terminates on an NNI port, one additional condition can cause the local UFM, FRP, or FRM to send an A-bit=0 to the local device: if the remote NNI port on the card receives an A-bit=0 from the remote network over the remote NNI, then the local card can propagate an A-bit=0 out the local port. The mechanism by which the remote card notifies the local card of the A-bit=0 coming from the remote network is OAM FastPackets. The local node sends one OAM FastPacket every 5 seconds for as long as the A-bit coming from the remote network is 0.</p>

Parameter	Description
link integrity timer (T391)	<p>Specifies the interval after which the system sends Status Enquiry messages across the NNI port. The range for the interval is 5–30 seconds. The default is 6 seconds. Both networks do not need to have the same T391 value.</p> <p>On a Frame Relay NNI port, the Link Integrity Timer (T391) specifies how often the UFM, FRP, or FRM generates a Status Enquiry message to the attached network using the selected NNI signaling protocol (Annex A or Annex D). The card should receive a Status message for every Status Enquiry message it transmits. If the Frame Relay card receives either no responses or invalid responses, a Port Communication Failure results (and causes a minor alarm). Using the default values for N392 Error Threshold and N393 Monitored Events Count in an example: an error occurs when no response (or a bad response) arrives for 3 out of the last 4 Status Enquiry messages. (The default for N392 Error Threshold is 3. For N393 Monitored Events Count, the default is 4.)</p>
N392 error threshold	Specifies the number of bad or undelivered responses to Status Enquiry messages that can occur before the system records a Port Communication Failure. The range is 1–10. The default is 3. See the description of the <i>link integrity timer</i> parameter for example usage.
N393 monitored events count	Specifies the number of Status Enquiry messages in a period wherein the system waits for responses to the enquiries. The range is 1–10. The default is 4. See the description of the <i>link integrity timer</i> parameter for example usage.
full status polling cycle (N391)	Specifies the interval at which the system sends the Full Status Report request for all PVCs across the NNI port. The range is 1–255 polling cycles. The default is 10 cycles. The Full Status reports the status of <i>all</i> the connections across the NNI.
card type	Specifies the card type when you enter the cnffrport command in a job. This parameter is not available except when you specify cnffrport in a job by using the addjob command. During the job specification, you enter the <i>card type</i> just after the <i>slot.port</i> during the command specification phase of addjob . Valid <i>card types</i> are “V.35,” “X.21,” “port,” and “line,” where “line” indicates a T1 or E1 line.
CLLM status Tx Timer	Specifies an interval for the system to send ForeSight congestion messages across the NNI. The range is 40 ms–350 ms. The default is 100 ms. Both networks must be Cisco WAN Switching networks.
IDE to DE mapping	Specifies whether the destination system should map the internal DE bit (IDE) status in the FastPacket or ATM cell to the Frame Relay DE bit at the destination. Enter y (yes) or n (no). If you specify the non-standard case of CIR=0 with either addcon or cnffrcs , you must first enable <i>IDE to DE mapping</i> . Refer to the section titled “Using Frame Relay Classes” for important information on setting CIR=0.
interface control template	Specifies the control leads available on the V.35 and X.21 physical Frame Relay ports and the meaning for each lead.
channel range	Specifies the DS0s for the T1 or E1 logical port. The value can be 1 or a contiguous combination in the range 1–24 for T1 or 1–31 for E1. For example, 7–12 indicates 6 DS0s for the port, starting with DS0 7. Before you use this command, specify the valid channel range with the addfrport command.
channel speed	Specifies the bandwidth available to a logical port. The speed is 64 Kbps times the number of DS0s you specify with the <i>channel range</i> parameter.

cnfict

Configures the interface control template signals. Each interface control lead must be individually configured. (Each data channel has a default interface control template for its active, conditioned, and looped-near and far states.) The signals available to **cnfict** depend on the type of back card and whether the port mode is DCE or DTE. On an IPX node, the applicable front cards are the SDP, LDP, FRP, CDP (for data), and FTC (for data). On an IGX node, the applicable front cards are the LDM, HDM, FRM, UFM, CVM (for data), and FTM (for data).

Note The **cnfict** command is not valid for V.11 and X.21 interfaces. For FRP V.35 and Port Concentrator V.35 and V.28 interfaces, only the active template is usable, and you can configure the leads to on or off.

When Y-cable redundancy is in effect, the control template configuration for the data channels terminating at the primary slot also applies to the data channels of the secondary slot. Any configuration information you attempt to apply to the secondary slot is ignored. The following lists which leads are configurable for each type of data interface supported by the IPX or IGX node. The entries under the “IPX or IGX Name” column indicate the abbreviations to use when you specify input or output leads on the command line.

Table 8-17 Configurable Lead Listing

Source	IPX/IGX Name	EIA/TIA-232C	EIA/TIA-232D	EIA/TI-449	V.35	X.21	Fast EIA	CCITT (ITU-T) Equivalent	Function
DTE	RTS	CA	CA	RS	C		F4	105	Request to Send
DCE	CTS	CB	CB	CS	D		F4	106	Clear to Send
DCE	DSR	CC	CC	DM	E		F3	107	Data Set Ready
DCE	DCD	CF	CF	RR	F		F7	109	Data Carrier Detect (RLSD)
DCE	QM	QM	QM						Equalizer Mode
DTE	pin 11	11	11						Sometimes used for Data
DCE	SDCD	SCF	SCF					122	Secondary Data Carrier Detect
DCE	SCTS	SCB	SCB					121	Secondary Clear to Send
DTE	STxD	SBA	SBA				F5	118	Secondary Transmit Data
DTE	NS			NS			F7		New Sync
DCE	SRxD	SBB	SBB				F5	119	Secondary Receive Data
DCE	DCR	DCR							Divided Receiver Clock
DTE	RL		RL	RL			F6		Remote Loopback
DTE	SRTS	SCA	SCA					120	Secondary Request to Send
DTE	DTR	CD	CD	TR	H		F3	108.2	Data Terminal Ready
DCE	SQ	CG	CG	SQ				110	Signal Quality Detect
DCE	RI	CE	CE	IC	J**			125	Ring Indicator
DTE	SF	CH	CH	SF				111	Signal Rate Select (to DCE)
DCE	SI	CI	CI	SI				112	Signal Rate Select (to DTE)

Source	IPX/IGX Name	EIA/TIA-232C	EIA/TIA-232D	EIA/TI-449	V.35	X.21	Fast EIA	CCITT (ITU-T) Equivalent	Function
DTE	BSY	BSY		IS			F1		Busy (In Service)
DCE	SB		TST	SB			F1		Test Indicator
DTE	LL			LL			F2		Local Loopback
DCE	TM			TM	K**		F6		Test Mode
DTE	SS			SS					Select Standby
DTE	C					C			Control
DCE	I					I			Indicator

Asterisks (**) indicate the listing is applicable to only an SDP or HDM card. Pins 11 and 23 on an RS-232 port are bi-directional, and their default direction is input. See the **cnfmdir** command for information on changing the direction of these pins. The **cpyict** command can be used to copy an interface control template from one data channel to another. The template can then be edited using the **cnfict** command. The **dspbob** command displays the state of leads at specified intervals.

The preceding list shows the equivalence between RS-232C, RS-232D, RS-449, V.35, and X.21 interfaces. An IPX or IGX treats leads impartially for non-interleaved connections. Any signal arriving on an EIA pin at one end may be transmitted to any pin at the other end. An imposed maximum of 12 EIA leads applies to any interface type. For interleaved EIA connections, the “Fast EIA” column shows which leads are carried in the interleaved bytes in the data packets. All remaining leads are carried in traditional control lead packets.

Full Name

Configure interface control template

Syntax

cnfict <port> <template> <output> <source>

Related Commands

addextlp, dspict, tstport

Attributes

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

Example 1

```
cnfict 25.1 a cts on
```

Description

Configure the active interface control template for channel 25.1 to CTS-on. CTS-on means that when the port is active, the CTS lead is asserted.

System Response

```
beta          TRM  YourID:1          IPX 32    9.1    Aug. 15 1997 17:36 MST
```

```
Data Channel:    25.1
Interface:       RS232  DCE
Clocking:        Normal
```

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
RI	OFF	DSR	ON
CTS	ON	SRxD	ON
DCR	OFF	DCD	ON
SCTS	ON	SDCD	ON
SQ	ON		

```
Last Command: cnfict 25.1 a cts on
```

```
Next Command:
```

Example 2

```
cnfict 9.1 a rts on
```

Description

Configure the active interface control template to have RTS-on. This means that when the port is active, the RTS lead is asserted.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 10:23 PST

Port:          9.1          [ACTIVE ]
Interface:     FRI-V35 DTE          Configured Clock: 256 Kbps
Clocking:      Normal          Measured Rx Clock: 0 Kbps
Port ID                7
Port Queue Depth      65535      OAM Pkt Threshold      3 pkts
ECN Queue Threshold   65535      T391 Link Intg Timer   6 sec
DE Threshold          100 %      N391 Full Status Poll  10 cyl
Signalling Protocol   None      ForeSight (CLLM)       No
Asynchronous Status   No      CLLM Status Tx Timer   0 msec
T392 Polling Verif Timer 15      Interface Control Template
N392 Error Threshold  3          Lead      State
N393 Monitored Events Count 4          RTS       ON
Communicate Priority   No          DTR       ON
Upper/Lower RNR Thresh 75%/ 25%
Min Flags / Frames    1

Last Command: cnfict 9.1 a rts on

Next Command:
```

Example 3

cnfict 31.1 n dsr on

Description

Configure the near interface control template for 31.1, to DSR on (DDS trunk).

System Response

```

beta          TRM   YourID:1          IPX 32    9.1    Aug. 15 1997 17:38 MST

Data Channel:      31.1
Interface:         DDS-4   OCU Config
Clocking:          Looped

          Interface Control Template for Connection while NEAR EXT LOOPED

Lead   Output Value          Lead   Output Value
DSR    ON                   CTS    ON
DCD    ON

Last Command: cnfict 31.1 near dsr on

Next Command:
```

Table 8-18 cnfict-Parameters

Parameter	Description																		
port	Specifies the data channel or Frame Relay port whose interface control template you want to configure. Specify the port in the format <i>slot.port</i>																		
template	Specifies which interface control template to configure for the channel and has the format: a/c/l/n/f. Valid entries are:																		
	<table border="1"> <thead> <tr> <th>Entry</th> <th>Template</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>a</td> <td>Active</td> <td>The “active” control template is in effect while the data channel is active (normal operation).</td> </tr> <tr> <td>c</td> <td>Conditioned</td> <td>The “conditioned” control template is in effect when conditioning is applied to the data channel. The conditioned template is used when the network detects that it cannot maintain the connection because of card failures or lack of bandwidth (The connection is failed.)</td> </tr> <tr> <td>l</td> <td>Looped</td> <td>The “looped” template is in effect when the data channel is being looped back in either direction. The looped template is used when the addloclp command or the addrmtlp command has been used to loop the connection within the network.</td> </tr> <tr> <td>n</td> <td>Near loopback</td> <td>The “near” template is in effect when running a tstport n command or an addextlp n command on a port. The port is configured such that the external near modem is placed in a loopback.</td> </tr> <tr> <td>f</td> <td>Far loopback</td> <td>The “far” template is in effect when running a tstport f command or an addextlp f command on a port. The port is configured such that the external far-end modem is placed in a loopback.</td> </tr> </tbody> </table>	Entry	Template	Description	a	Active	The “active” control template is in effect while the data channel is active (normal operation).	c	Conditioned	The “conditioned” control template is in effect when conditioning is applied to the data channel. The conditioned template is used when the network detects that it cannot maintain the connection because of card failures or lack of bandwidth (The connection is failed.)	l	Looped	The “looped” template is in effect when the data channel is being looped back in either direction. The looped template is used when the addloclp command or the addrmtlp command has been used to loop the connection within the network.	n	Near loopback	The “near” template is in effect when running a tstport n command or an addextlp n command on a port. The port is configured such that the external near modem is placed in a loopback.	f	Far loopback	The “far” template is in effect when running a tstport f command or an addextlp f command on a port. The port is configured such that the external far-end modem is placed in a loopback.
Entry	Template	Description																	
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c	Conditioned	The “conditioned” control template is in effect when conditioning is applied to the data channel. The conditioned template is used when the network detects that it cannot maintain the connection because of card failures or lack of bandwidth (The connection is failed.)																	
l	Looped	The “looped” template is in effect when the data channel is being looped back in either direction. The looped template is used when the addloclp command or the addrmtlp command has been used to loop the connection within the network.																	
n	Near loopback	The “near” template is in effect when running a tstport n command or an addextlp n command on a port. The port is configured such that the external near modem is placed in a loopback.																	
f	Far loopback	The “far” template is in effect when running a tstport f command or an addextlp f command on a port. The port is configured such that the external far-end modem is placed in a loopback.																	
	The only valid template for a Frame Relay port, X.21 or V.35, is the ACTIVE template. Also, all the output leads have steady state values and do not follow local or remote inputs.																		
output	Specifies the output lead to configure. Valid abbreviations for output leads are listed in the previous parameter (template). Configurable output leads vary depending on the type of data interface: RS-232, V.35, X.21, or RS-449.																		
source	Specifies how the lead is to be configured and has the format: on off local remote input delay Delay is an optional parameter. The following lists the valid source choices:																		
	<table border="1"> <tbody> <tr> <td>on</td> <td>The output lead is asserted.</td> </tr> <tr> <td>off</td> <td>The output lead is inhibited.</td> </tr> <tr> <td>l</td> <td>(for local) indicates that the output follows a local lead.</td> </tr> <tr> <td>r</td> <td>(for remote) indicates that the output follows a remote lead.</td> </tr> <tr> <td>input</td> <td>The name of the local or remote input lead that the output lead follows.</td> </tr> <tr> <td>delay</td> <td>The time in milliseconds that separates the “off” to “on” lead transitions. Delay is valid <i>only</i> when the output lead is CTS and the input lead is local RTS. “On” to “Off” lead transitions are not subject to this delay.</td> </tr> </tbody> </table>	on	The output lead is asserted.	off	The output lead is inhibited.	l	(for local) indicates that the output follows a local lead.	r	(for remote) indicates that the output follows a remote lead.	input	The name of the local or remote input lead that the output lead follows.	delay	The time in milliseconds that separates the “off” to “on” lead transitions. Delay is valid <i>only</i> when the output lead is CTS and the input lead is local RTS. “On” to “Off” lead transitions are not subject to this delay.						
on	The output lead is asserted.																		
off	The output lead is inhibited.																		
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r	(for remote) indicates that the output follows a remote lead.																		
input	The name of the local or remote input lead that the output lead follows.																		
delay	The time in milliseconds that separates the “off” to “on” lead transitions. Delay is valid <i>only</i> when the output lead is CTS and the input lead is local RTS. “On” to “Off” lead transitions are not subject to this delay.																		

cnfmode

Selects a *mode* of the card for a UFM-U back card. The mode of a card is combination of maximum port speeds and for specific port numbers. Table 8-19 lists the maximum port speeds and active ports for each mode. The **cnfmode** command lets you select 1 of 27 modes for either a UFI-12V.35 back card or a UFI-12X.21 back card. For a UFI-4HSSI back card, 3 modes are available. Note that you specify the actual speed of an individual port by using **cnffrport**. The IGX documentation describes the application of the modes and the sequence of execution of these commands.

Note that **cnfmode** and **cnfufmumode** are the same command.

Table 8-19 Card Modes for Unchannelized Back Cards

Mode	V.35 and X.21 Ports												HSSI Ports			
	Group A				Group B				Group C				A		B	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
1	3	3	3	3	3	3	3	3	3	3	3	3	8	8	8	8
2	8	-	8	-	8	-	8	-	8	-	8	-	16	-	16	-
3	10	-	-	-	10	-	-	-	10	-	-	-	16	-	-	-
4	8	-	8	-	3	3	3	3	3	3	3	3				
5	10	-	-	-	3	3	3	3	3	3	3	3				
6	8	-	8	-	8	-	8	-	3	3	3	3				
7	10	-	-	-	8	-	8	-	3	3	3	3				
8	10	-	-	-	10	-	-	-	3	3	3	3				
9	10	-	-	-	8	-	8	-	8	-	8	-				
10	10	-	-	-	10	-	-	-	8	-	8	-				
11	3	3	3	3	8	-	8	-	3	3	3	3				
12	3	3	3	3	3	3	3	3	8	-	8	-				
13	3	3	3	3	10	-	-	-	3	3	3	3				
14	3	3	3	3	3	3	3	3	10	-	-	-				
15	8	-	8	-	3	3	3	3	8	-	8	-				
16	3	3	3	3	8	-	8	-	8	-	8	-				
17	8	-	8	-	10	-	-	-	3	3	3	3				
18	8	-	8	-	3	3	3	3	10	-	-	-				
19	3	3	3	3	8	-	8	-	10	-	-	-				
20	3	3	3	3	10	-	-	-	8	-	8	-				
21	10	-	-	-	3	3	3	3	8	-	8	-				
22	10	-	-	-	3	3	3	3	10	-	-	-				
23	3	3	3	3	10	-	-	-	10	-	-	-				
24	8	-	8	-	10	-	-	-	8	-	8	-				
25	8	-	8	-	8	-	8	-	10	-	-	-				
26	10	-	-	-	8	-	8	-	10	-	-	-				
27	8	-	8	-	10	-	-	-	10	-	-	-				

Full Name

Configure mode

Syntax

cnfmode <port> <mode>

Related Commands

cnffrport, dspmode, dspmodes

Attributes

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

Example 1

```
cnfmode 13 4
```

Description

Configure the UFM-U card set in slot 13 to have mode 4. Note that the display shows which ports are active for each mode number but does not show the current mode of the UFM-U. To see the current mode of the UFM-U, use **dspmode**.

System Response

```
w180          TN      SuperUser      IGX 16      9.1 July 30 1997 01:25 GMT
```

UFMU MODES AND PORT AVAILABILITY BITMAP

```

Mode[ 1]:111111111111  Mode[ 2]:101010101010  Mode[ 3]:100010001000
Mode[ 4]:101011111111  Mode[ 5]:100011111111  Mode[ 6]:101010101111
Mode[ 7]:100010101111  Mode[ 8]:100010001111  Mode[ 9]:100010101010
Mode[10]:100010001010  Mode[11]:111110101111  Mode[12]:111111111010
Mode[13]:111110001111  Mode[14]:111111111000  Mode[15]:101011111010
Mode[16]:111110101010  Mode[17]:101010001111  Mode[18]:101011111000
Mode[19]:111110101000  Mode[20]:111110001010  Mode[21]:100011111010
Mode[22]:100011111000  Mode[23]:111110001000  Mode[24]:101010001010
Mode[25]:101010101000  Mode[26]:100010101000  Mode[27]:101010001000

```

This Command: cnfmode 13

Enter The New UFMU Mode [1]: 4

Table 8-20 **cnfmode—Parameters**

Parameter	Description
slot	Specifies the slot of the UFM-U card.
mode	Specifies the mode of the UFM-U card set. The range for V.35 and X.21 ports is 1–27. The range for HSSI ports is 1–3. You may have to delete connections and down one or more ports before you execute cnfmode . To determine if you must delete connection or for a detailed description of the modes of a UFM-U, see the <i>Cisco IGX 8400 Series Reference</i> .

cpyict

Copies all control template information associated with a given channel: the active template information, the conditioned template information, and the looped template information near, far. Once copied, the control template information may be edited with the **cnfict** command. See the **cnfict** command for more information on interface control templates.

Full Name

Copy SDP/LDP/FRP interface control template

Syntax

cpyict <source_port> <destination_port>

Related Commands

cnfict, **dspict**

Attributes

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

Example 1

```
cpyict 25.1 25.2
```

Description

Copy the interface control template on channel 25.1 to channel 25.2.

System Response

```
beta          TRM   YourID:1          IPX 32    9.1    Aug. 15 1997 17:40 MST
```

```
Data Channel:    25.2
Interface:       RS232  DCE
Clocking:       Normal
```

```
Interface Control Template for Connection while ACTIVE
```

Lead	Output Value	Lead	Output Value
RI	OFF	DSR	ON
CTS	ON	SRxD	ON
DCR	OFF	DCD	ON
SCTS	ON	SDCD	ON

SQ ON

Last Command: cpyict 25.1 25.2

Next Command:

Example 2

cpyict 25.1 25.2

Description

Copy the Frame Relay interface control template on port 25.1 to 25.2.

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 15 1997 17:40 MST

Data Channel: 25.2
 Interface: RS232 DCE
 Clocking: Normal

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
RI	OFF	DSR	ON
CTS	ON	SRxD	ON
DCR	OFF	DCD	ON
SCTS	ON	SDCD	ON
SQ	ON		

Last Command: cpyict 25.1 25.2

Next Command:

Table 8-21 cpyict-Parameters

Parameter	Description
source channel	Specifies the data channel or Frame Relay port.
destination channel	Specifies the data channel or Frame Relay port you want to receive the copied control template information.

delcon

Removes connections from the network. A prompt appears for confirming the deletion. Connections can be deleted from the node at either end of the connection. Do not delete a connection when the node at the other end of the connection is unreachable. The unreachable node will not recognize the deletion. It is especially important not to delete a connection to an unreachable node and then connect that channel to another node. Channel connections are added to the network with the **addcon** command.

Full Name

Delete connections

Syntax

delcon <channel(s)>

Related Commands

addcon, dspcon, dspcons

Attributes

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

Example 1

```
delcon 25.1
```

Description

Delete connection 25.1. The connections to delete are highlighted. A prompt asks you to confirm the deletion. Respond with “y” for yes. Connection 25.1 is deleted.

System Response

```

beta          TRM  YourID:1          IPX 32    9.1    Aug. 15 1997 15:43 MST

Local        Remote      Remote
Channel      NodeName   Channel    State   Type    Compression  Code Avoid COS O
19.1.101    gamma      8.2.300   Ok     fr
19.2.302    alpha      9.2.400   Ok     fr
25.2        gamma      6.1       Ok     256          7/8          0 L

```

Last Command:

Next Command: delcon 25.1

Table 8-22 delcon-Parameters

Parameter	Description
channel	<p>Specifies the channel or set of channels in the following format: slot.port.DLCI.</p> <p>On an FRP or FRM, the range for <i>port</i> is 1–24 or 1–31. On a UFM-C, the range for <i>port</i> is 1–250. (For connections on a UFM-C, <i>line</i> is not necessary because of the port-to-line mapping through addrport). For a UFM-U, the range for <i>port</i> is 1–12 for V.35 or X.21 and 1–4 for HSSI (unless Y-cable redundancy exists on the HSSI, in which case <i>port</i> can be only “1”). The range for <i>DLCI</i> is typically 16–1007.</p>

delfrport (T1/E1)

The information in this description applies to only Frame Relay ports using a T1 or E1 line. The **delfrport** command deletes logical ports on FRP, FRM, or UFM-C cards and “unassigns” associated DS0/timeslots. The deleted DS0/timeslots are available for you to assign to new logical ports (with the **addrport** command). The port display (normally visible through **dspfport** command) appears regardless of successful port deletion. The screen displays the defined port numbers for the specified line. The following lists the error and warning messages for this command.

Table 8-23 delfrport—Warnings and Error Messages

Messages	Reason for Message
"Slot is out of range"	Line number is not correct for FRP T1/E1.
"Port does not exist"	Logical port number does not exist.
"You must first down the port"	Logical port is up.
"You must first down the port"	Specified port is not first DS0/timeslot of logical port.

Full Name

Delete Frame Relay port

Syntax

For FRM or FRP: **delfrport** <slot.port>

For UFM: **delfrport** <slot.port> <line.ds0_range>

Related Commands

addrport, dspfrport, dnfrport

Attributes

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

Example 1

```
delfrport 8.1
```

Description

Delete Frame Relay port 8.1.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 15 1997 17:28 CST

Port configuration for FRP 8

<u>From</u>	<u>Chan</u>	<u>Speed</u>	<u>Interface</u>	<u>State</u>
1	9-15	448	FRI T1	ACTIVE
20	20-24	320	FRI T1	ACTIVE

Last Command: delfrport 8.1

Next Command:

Table 8-24 delfrport (T1/E1)–Parameters

Parameter	Description
slot	Specifies the physical FRP or FRM T1 or E1 line. The range of logical port numbers is 1–24 for T1 lines and 1–31 for E1 lines.
port	Specifies the logical port number of the port to delete.

dnfrport

Deactivates (“downs”) the specified Frame Relay port. Before deactivating a port, you must delete all connections on the port (see **delcon** description).

Full Name

Down Frame Relay port

Syntax

For UFM-U, FRM, or FRP: **dnfrport** <slot.port>

For UFM-C: **dnfrport** <slot.port> <line.ds0_range>

Related Commands

cnffrport, **dspfrport**, **upfrport**

Attributes

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

Example 1

```
dnfrport 3.1
```

Description

Down Frame Relay port 3.1.

System Response

```

pubsigxl      TN      SuperUser      IGX 32      9.1      Aug. 14 1997 03:49 GMT

Port:         3.1      [INACTIVE]
Interface:    FRI-T1      Configured Clock:    64 Kbps
Clocking:     None      Measured Rx Clock:  None
Min Flags / Frames      1
Channel Range           1
Port ID                 -
Port Queue Depth        65535
ECN Queue Threshold     65535
DE Threshold            100 %
Signalling Protocol     None
Asynchronous Status    No
T392 Polling Verif Timer 15
N392 Error Threshold    3
N393 Monitored Events Count 4
Communicate Priority    No
Upper/Lower RNR Thresh 75%/ 25%

Last Command: dnfrport 3.1

Next Command:
    
```

Table 8-25 dnfrport-Parameters

Parameter	Description
slot	Specifies the slot number of the Frame Relay card with the port to down.
port	Specifies the port number to deactivate on the card specified by <i>slot</i> . On an FRP or FRM, the range is 1–24 or 1–31. On a UFM-C, the range is 1–250. On a UFM-U with a V.35 or X.21 interface, the range is 1–12. On a UFM-U with a HSSI interface, the range is 1–4.
line	The physical line on UFM-C card sets (not used for UFM-U cards).

dspchcnf

Displays configuration details for voice, data, or Frame Relay channels.

Voice channels display:	Utilization, Adaptive Voice, Gain, Dial Type, Interface Type, and OnHook and Conditioning specifications.
Data channels display:	Maximum EIA Update Rate, Percentage Utilization, DFM Pattern Length, and DFM Status.
Frame relay channels display:	Minimum Information Rate, VC Queue Buffer Size or Bc, Peak Information Rate or Be, Maximum Credits, ECN Queue Buffer Size, Quiescent Information Rate, ForeSight enabled or not, and Percentage Utilization.

If the channel specified is a voice channel, the display includes configuration details for all channels on the specified circuit line starting with the specified channel. If the channel specified is a data channel, the display includes configuration details for all channels on the specified data card (CDP, SDP or LDP) starting with the specified channel. If the channel specified is a Frame Relay channel, the display includes configuration details for all channels on the specified FRP port starting with the specified channel. If you specify a Frame Relay port only with no DLCI, the display includes configuration details for all channels on the Frame Relay port specified. The display also indicates either Cisco parameters or standard Frame Relay parameters where appropriate.

Full Name

Display channel configuration

Syntax

dspchcnf <start_channel>

Related Commands

cnfchadv, **cnfchdfm**, **cnfchdl**, **cnfcheia**, **cnfchgn**, **cnfchpri**, **cnfchutl**, **cnffrcon**

Attributes

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

Example 1

```
dspchcnf 9.1
```

Description

Display configuration values for all channels on Frame Relay port 9.1.

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 15 1997 15:56 PST

                Frame Relay Channel Configuration  Port: 9.1

Channel      MIR   CIR   VC Q Depth   PIR   Cmax   ECN  QThresh   QIR   FST   % Util
9.1.100     9.6   9.6           5     256    10     65535   9.6    n     100
```

Last Command: dspchcnf 9.1

Next Command:

Table 8-26 dspchcnf-Parameters

Parameter	Description
channel	Specifies the channel at which the display begins. The format is <i>slot.port.DLCI</i> . The DLCI parameter is optional.

dspchstats

Displays traffic statistics and the statistics collection period for the specified channel. The display shows when the statistics were last cleared and the time that has elapsed during the current collection period. The statistical parameters include:

- Number of frames transmitted
- Average frame size in bytes
- Average frame rate in frames per second
- Number of packets transmitted
- Average packet rate in packets per second
- Percentage utilization of the channel

For each parameter, the values appear in the following categories:

- From the port (something coming into a port, typically from an external device/box)
- To the network (something going out of the switch; typically trunks)
- Discarded (received from the attached device but not transmitted to the network)
- From the network (received in; typically, into the trunk)
- To the port (transmitted out of the port, to an external device or cloud)
- Discarded (received from the network but not transmitted to the attached device)

The **dspchstats** command also displays ECN (Explicit Congestion Notification) statistics.

- **FECN:** Lists number of frames sent to the receiving end router with the FECN (Forward Explicit Congestion Notification) bit set and the ratio of these frames to the total number of frames sent. This is a measure of Frame Relay congestion and the extent to which the receiving router has been informed of frames received that encountered congestion.
- **BECN:** Lists number of frames sent to the transmitting end router with the BECN (Backward Explicit Congestion Notification) bit set and the ratio of these frames to the total number of frames sent. This is a measure of Frame Relay congestion and the extent to which the transmitting router has been informed of frames received that encountered congestion.
- **Min-Pk. bytes rcvd:** Lists number of bytes received at the receiving end router during the greatest minute-peak of bytes received.
- **minutes congested:** Lists number of congested minutes of received data since the command started.

Full Name

Display Frame Relay channel statistics

Syntax

dspchstats <channel> [interval]

Related Commands

clrchstats, cnfchstats

Attributes

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

Example 1

dspchstats 5.1.100

Description

Display the channel statistics for connection 5.1.100.

System Response

```
pubsipx1      TN      SuperUser      IPX 16      9.1      Aug. 7 1997  04:04 PDT

Channel Statistics: 5.1.100      Cleared: July 25 1997 06:07
MIR: 9.6 kbps      Collection Time: 12 day(s) 21:48:41      Corrupted: YES
      Frames      Avg Size      Avg      Util      Packets      Avg
      (bytes)      (fps)      (%)
From Port:      0      0      0      0
To Network:      0      0      0      0      58732      0
Discarded:      0      0      0      0
From Network:      1      5      0      0      1      0
To Port:      0      0      0      0
Discarded:      1      5      0      0      1      0
      ECN Stats:      Avg Rx VC Q:      0      ForeSight RTD      --
Min-Pk bytes rcvd:      0      FECN Frames:      0      FECN Ratio (%)      0
Minutes Congested:      0      BECN Frames:      0      BECN Ratio (%)      0
Frames rcvd in excess of CIR:      0      Bytes rcvd in excess of CIR:      0
Frames xmtd in excess of CIR:      0      Bytes xmtd in excess of CIR:      0

This Command: dspchstats 5.1.100

Hit DEL key to quit:
```

Table 8-27 dspchstats-Parameters

Parameter	Description
channel	Specifies the channel. The command displays connection information for one channel at a time, so you cannot specify a range of channels. The format for channel is <i>slot.port</i> .

Table 8-28 **dspchstats–Optional Parameters**

Parameter	Description
interval	Specifies the refresh interval for displaying data. The range is 1–60 seconds. The default is 1 second.

dspcon

Displays connection information for a channel. The information displayed includes:

- The channel number at both the local and remote ends of the connection
- The node name at both ends of the connection
- The type or data rate of the connection
- The routing restriction
- The class of service (COS) of the connection
- The connection route, which lists the end nodes and any intermediate nodes
- The preferred route for the connection (if configured)
- If cost-based Auto Route is configured, displays maximum and current costs for a connection route.
- The status of the cards associated with the connection
- Any Y-cable conflicts (LDI, CDP for example)
- The compression status (VAD on or off, ADPCM on or off, DFM on or off, Frame Relay compression on or off)
- The connection bandwidth parameter values for Frame Relay
- The circuit round trip delay (RTD) if ForeSight is enabled

A failure that affects the connection flashes on the screen. For Frame Relay NNI ports, the NNI value indicates the A-bit value was received over the NNI from the remote network. The possible status messages are:

- OK Connection OK.
- FAILED Connection failed.
- MISSING DLCI was deleted in other network at NNI. A previous status report indicated a valid DLCI was present but an updated report did not.
- UNUSED Indicates the UNI port does not support reporting of NNI A-bit status.

Full Name

Display connections

Syntax

dspcon <slot.port.DLCI>

Related Commands

addcon, cnfcos, cnfpref, cnfrtcost, dspcons

Attributes

```

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

```

Example 1

```
dspcon 19.1.101
```

Description

Display connection information for Frame Relay channel 19.1.101 (cost based routing is configured).

System Response

```

beta          TRM   YourID:1          IPX 32    9.1    Aug. 15 1997 15:42 MST

Conn: 19.1.101  gamma      8.2.300    fr
      MIR      CIR      VC Q Depth    PIR      Cmax    ECN QThresh    QIR      FST
      9.6/9.6  9.6/9.6  65535/65535  256/256   10/10   65535/65535  9.6/9.6  n
% Util: 100/100
Owner: LOCAL      Restriction: NONE  COS: 0                      Status: OK
TestRTD: 0 msec   Trunk Cell Routing Restrict: Y  Max Cost: 100  Route Cost: 36

Path:   beta    15--15gamma
Pref:   Not Configured

beta 19.1.101          gamma 8.2.300
FRP:  OK              FRP:  OK
FRI:  OK              FRI:  OK

```

```
Last Command: dspcon 19.1.101
```

```
Next Command:
```

Table 8-29 dspcon-Parameters

Parameter	Description
channel	Specifies the channel in the format <i>slot.port.DLCI</i> . The dspcon command displays information for one connection at a time.

dspcons

Displays information about the connections on an IPX or IGX node. The following table lists all possible information headings that appear in the display. The actual headings that appear depend on the choice of selected optional parameters—including no parameters. Entering the command with no parameters displays all connections. The screen examples in this description reflect various parameter options, including no parameters.

Table 8-30 dspcons Output

Fields	Description										
Local Channel	The connection's channel at this node.										
Remote Node Name	The name of the node at the other end of the connection.										
Remote Channel	The connection's channel at the remote node.										
State	The possible connections states are as follows: <table border="1"> <thead> <tr> <th>State</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>OK</td> <td>routed, A-bit = 1.</td> </tr> <tr> <td>Down</td> <td>downed.</td> </tr> <tr> <td>Failed</td> <td>unrouted, but trying; A-bit = 0.</td> </tr> <tr> <td>Unused</td> <td>The UNI port does not support reporting of NNI A-bit status.</td> </tr> </tbody> </table>	State	Description	OK	routed, A-bit = 1.	Down	downed.	Failed	unrouted, but trying; A-bit = 0.	Unused	The UNI port does not support reporting of NNI A-bit status.
State	Description										
OK	routed, A-bit = 1.										
Down	downed.										
Failed	unrouted, but trying; A-bit = 0.										
Unused	The UNI port does not support reporting of NNI A-bit status.										
Type	The type of connection. For example, this can be Frame Relay, Frame Relay with interworking, voice, data, and so on.										
Only __	If one parameter pre-empts another, this heading appears with the accepted parameter type. To name two examples: if the parameter is -d for data or -fail for failed connections only, this heading becomes either "Only d" or "Only fail," respectively.										
Code	The encoding used for data connections (7/8 = data byte is 7 bits of user data plus a "1" in the last bit position, 8/8 = data byte is 8 bits of user data, 8/8I = data byte is 8 bits of inverted user data).										
Route Avoid	The type of lines to avoid when routing (satellite lines, terrestrial lines, lines with zero code suppression).										
Compression	The type of compression applied to the connection (PCM, PCM and VAD, ADPCM, VAD and ADPCM for voice connections), (DFM for data connections).										
COS	The Class Of Service.										
A-bit	A-bit status at both ends of the connection.										
Loopback	This is not a heading but rather the standard loopback symbols indicating the presence of a test loop. See the "Troubleshooting" chapter for an explanation of these symbols.										

Full Name

Display connections

Syntax

dspcons [*start_channel*] [*nodename*] [-f] [-v] [-d] [-atfr] [-abit] [-fabit] [-fail] [-down]

where

<i>start_channel</i>	is the starting channel to display
<i>nodename</i>	specifies that connections for only the named node appear in the display
-f	equals display frame relay connection only
-v	equals display only voice connections
-d	equals display only data connections and do so in Kbps.
-atfr	equals frame relay to ATM interworking connections (also displays atfr with ForeSight)
-abit	equals show status of the A-bit
-fabit	equals show only connections with failed A-bits
-fail	equals show only failed connections
-down	equals show only downed connections

Note Some parameters may supersede other parameters.

Related Commands

addcon, cnfchadv, chfchdfm

Attributes

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

Example 1

```
dspcons
```

Description

Displays all connections

System Response

sw83 VT SuperUser IPX 16 9.1 Aug. 14 1997 12:58 PST

From	Remote	Remote	State	Type	Compress	Code	COS
3.1.27	NodeName	Channel					
3.1.27	sw86	13.1.1.27	Ok	atfst			0
3.1.28	sw86	13.1.1.28	Ok	atfst			0
3.1.29	sw86	13.1.1.29	Ok	atfst			0
3.1.30	sw86	13.1.1.30	Ok	atfst			0
3.1.31	sw86	13.1.1.31	Ok	atfst			0
3.1.32	sw86	13.1.1.32	Ok	atfst			0
3.1.33	sw86	13.1.1.33	Ok	atfst			0
3.1.34	sw86	13.1.1.34	Ok	atfst			0
3.1.35	sw86	13.1.1.35	Ok	atfst			0
3.1.36	sw86	13.1.1.36	Ok	atfst			0
3.1.37	sw86	13.1.1.37	Ok	atfst			0
3.1.38	sw86	13.1.1.38	Ok	atfst			0
3.1.39	sw86	13.1.1.39	Ok	atfst			0

This Command: dspcons

Continue?

Example 2

dspcons 19.1

Description

Display connections starting with 19.1. This example shows frame and data connections.

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 15 1997 15:37 MST

Local	Remote	Remote	State	Type	Compression	Code	Route	Avoid	COS	O
Channel	NodeName	Channel								
19.1.101	gamma	8.2.300	Ok	fr					0	L
19.2.302	alpha	9.2.400	Ok	fr					0	R
25.1	alpha	5.1	Ok	256		7/8			0	L
25.2	gamma	6.1	Ok	256		7/8			0	L

Last Command: dspcons 19.1

Next Command:

Example 3

```
dspcons -f
```

Description

Display Frame Relay connections only.

System Response

```
beta          TRM    YourID:1      IPX 32    9.1    Aug. 15 1997 15:38 MST

Local        Remote      Remote      Only
Channel      NodeName    Channel     State      f          Compression Code Avoid COS O
19.1.101    gamma      8.2.300    Ok        fr
19.2.302    alpha      9.2.400    Ok        fr
                                0         0         0         0         0         0         0         0         0         0
                                L         R
```

Last Command: dspcons -f

Next Command:

Example 4

```
dspcons -abit
```

Description

Display connections and show the status of the A-bit on the local and remote nodes.

System Response

```
sw83          VT     SuperUser    IPX 16    9.1    Aug. 14 1997 13:02 PST

Local        Remote      Remote      State      Local      Remote
Channel      NodeName    Channel     State      A-bit     A-bit
3.1.1        sw86        13.1.1.1    Ok        OK        OK
3.1.2        sw86        13.1.1.2    Ok        OK        OK
3.1.3        sw86        13.1.1.3    Ok        OK        OK
3.1.4        sw86        13.1.1.4    Ok        OK        OK
3.1.5        sw86        13.1.1.5    Ok        OK        OK
3.1.6        sw86        13.1.1.6    Ok        OK        OK
3.1.7        sw86        13.1.1.7    Ok        OK        OK
3.1.8        sw86        13.1.1.8    Ok        OK        OK
3.1.9        sw86        13.1.1.9    Ok        OK        OK
3.1.10       sw86        13.1.1.10   Ok        OK        OK
3.1.11       sw86        13.1.1.11   Ok        OK        OK
3.1.12       sw86        13.1.1.12   Ok        OK        OK
3.1.13       sw86        13.1.1.13   Ok        OK        OK
```

This Command: dspcons -abit

Continue?

Table 8-31 dspcons–Optional Parameters

Parameter	Description
start channel	<p>Specifies the channel to begin the display. Specify <i>start channel</i> in one of the following formats:</p> <p><i>slot.port.DLCI</i> (Frame Relay channel) <i>remote node.group_name</i> (Frame Relay group connection)</p> <p>If you do not specify a starting channel, the display begins at the first connection.</p>
node name	<p>Specifies that only connections to this remote node from the local node be displayed. If no “nodename” is designated, connections from the local node to all other nodes are displayed.</p>
(connection types)	<p>Specifies that only connections of a certain type be displayed. If you do not add at least one argument to specify a particular connection type, all connections appear. When you enter the connection type on the command line, precede it with a hyphen (-). In some cases, you can add more than one connection type (with a space between), but not all compound arguments are compatible, so you may not always see the expected combination of types. The connection types are:</p> <ul style="list-style-type: none"> -v displays only voice connections. -d displays only data connections. -f displays only Frame Relay connections. -abit shows A-bit (nni) status. -fabit shows connections with failed A-bit (nni) status. -fail shows only failed connections. -siw shows service interworking connections. -atfr shows only network interworking connections.

dspfrcls

Displays the configuration of a Frame Relay class. Network-wide classes are available to provide a shortcut for adding Frame Relay connections. Refer to the section titled “Using Frame Relay Classes” at the beginning of this chapter for a definition of a Frame Relay class.

Full Name

Display Frame Relay classes

Syntax

dspfrcls

Related Commands

addcon, cnffrcls

Attributes

Privilege	1–2
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1

```
dspfrcls
```

Description

Display the Frame Relay class configurations.

The screen display is the same as that for the **cnffrcls** command.

System Response

sw83 TN SuperUser IPX 16 9.1 Aug. 23 1997 13:43 GMT

Frame Relay Connection Classes

#	MIR	CIR	VC Q Depth	PIR	Cmax	ECN QThresh
1	9.6/9.6	9.6/9.6	65535/65535	*/*	10/10	65535/65535
	QIR: 9.6/9.6 FST: n % Util: 100/100 Description: "Default 9.6"					
2	19.2/19.2	19.2/19.2	65535/65535	*/*	10/10	65535/65535
	QIR: 19.2/19.2 FST: n % Util: 100/100 Description: "Default 19.2"					
3	16/16	16/16	65535/65535	*/*	10/10	65535/65535
	QIR: 16/16 FST: n % Util: 100/100 Description: "Default 16"					
4	32/32	32/32	65535/65535	*/*	10/10	65535/65535
	QIR: 32/32 FST: n % Util: 100/100 Description: "Default 32"					
5	56/56	56/56	65535/65535	*/*	10/10	65535/65535
	QIR: 56/56 FST: n % Util: 100/100 Description: "Default 56"					

This Command: dspfrcls

Continue?

dspfrport

Displays information on Frame Relay cards and physical and logical ports. The applicable card sets are the FRP, FRM, and UFM. The content of the information display depends on the arguments you include with the command. The information can be:

- The status of all Frame Relay ports in a node
- General information on all ports on a selected FRP, FRM, or UFM card
- Configuration information on a single Frame Relay port.

The following are examples of the **dspfrport** command syntax:

dspfrport	Display the states of all Frame Relay ports in the node.
dspfrport 8	Display the port states for FRP in slot 8.
dspfrport 8.1	Display the configuration for port 1 of the FRP in slot 8.
dspfrport 6.44	Display the configuration for logical port 44 of the FRP-2 in slot 6.

The following is a list of possible displayed port parameters for a single port. For a more detailed description of these parameters, refer to the **cnffrport** command.

Table 8-32 Frame Relay Port Parameters

Parameters	Parameters
Port number	Polling Verification Timer
DLCI number	Error Threshold
State: Active or inactive	Monitored Events Count
Interface Type: V.35 or X.21, DCE or DTE	Priority Communicated
Configured clock speed in Kbps	The lead states in the Interface Control Template
Measured clock speed in Kbps	Receiver Not Ready Thresholds
The port VC queue depth in bytes	Flags per frame
The VC queue ECN threshold in bytes	OAM FastPacket Threshold (for NNI ports)
The DE threshold	Link Integrity Timer (for NNI ports FRP rev. F/H or above)
The Signaling Protocol	Full Status Polling cycle (for NNI ports)
Asynchronous Status	

Full Name

Display Frame Relay port

Syntax

dspfrport [slot | slot.port]

Related Commands
cnffrport, upfrport, dnfrport

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1

dspfrport

Description

Display the port status of the Frame Relay ports in the node.

System Response

```
alpha          TRM  YourID:1          IPX 16    9.1    Aug. 15 1997 15:48 PST

FRP Port States
Port  ID   State
9.1   0    ACTIVE
9.2   0    ACTIVE
9.3   0    INACTIVE
9.4   0    INACTIVE
```

Last Command: dspfrport

Next Command:

Example 2

dspfrport 5

Description

Display the status of the ports on the FRP in slot 5.

System Response

```
pubsidx1      TN      SuperUser      IPX 16      9.1      Sep. 7 1997 02:11 PDT
```

```
Port configuration for FRP 5
```

Port	ID	Speed	Interface	State	Protocol	Port Type
1	0	256	FRI-V35 (DCE)	ACTIVE	None	FR
2	0	256	FRI-V35 (DCE)	INACTIVE	None	FR
3	0	256	FRI-V35 (DCE)	INACTIVE	None	FR
4	0	256	FRI-V35 (DCE)	INACTIVE	None	FR

```
Last Command: dspfrport 5
```

```
Next Command:
```

Example 3

```
dspfrport 5.1
```

Description

Display port status for logical Frame Relay port 5.1. In the example, note the range of channels.

System Response

```
swl09      VT      SuperUser      IGX 16      9.1 Aug. 21 1997 18:14 GMT
```

```
Port:      5.1      [ACTIVE ]
Interface:  E1B      Configured Clock: 960 Kbps
Clocking:   None     Measured Rx Clock: None
```

Port ID	-	Min Flags / Frames	1
Port Queue Depth	32000	OAM Pkt Threshold	3 pkts
ECN Queue Threshold	65535	T391 Link Intg Timer	10 sec
DE Threshold	100 %	N391 Full Status Poll	6 cyl
Signalling Protocol	None	EFCI Mapping Enabled	No
Asynchronous Status	No	CLLM Enabled/Tx Timer	No/ 0 msec
T392 Polling Verif Timer	15	IDE to DE Mapping	Yes
N392 Error Threshold	3	Channel Speed	64
N393 Monitored Events Count	4	Line Number	1
Communicate Priority	No	Channel Range	1-15
Upper/Lower RNR Thresh	75%/ 25%		

```
Last Command: dspfrport 5.1
```

```
Next Command:
```

Example 4

`dspfrport 5`

Description

Display port status for all the Port Concentrator ports at slot 5.

System Response

```
tecate          LAN   SuperUser      IPX 16      9.1      Aug. 6 1997  09:59 PST
```

```
Port configuration for FRP 5
```

Port	ID	Speed	Interface	State	Protocol
1	0	64	V.35 (DCE)	ACTIVE	None
2	0	64	V.35 (DCE)	ACTIVE	None
3	0	38.4	V.11 (DTE)	ACTIVE	None
4	0	38.4	V.11 (DCE)	ACTIVE	None
5	0	38.4	V.11 (DCE)	ACTIVE	None
6	0	38.4	V.11 (DTE)	ACTIVE	None
7	0	19.2	V.11 (DCE)	ACTIVE	None
8	0	19.2	V.28 (DCE)	ACTIVE	None
9	0	19.2	V.28 (DTE)	ACTIVE	None
10	0	38.4	V.28 (DCE)	INACTIVE	None
11	0	38.4	V.28 (DCE)	INACTIVE	None
12	0	38.4	V.28 (DCE)	INACTIVE	None

```
Last Command: dspfrport 5
```

```
Continue?
```

Example 5

`dspfrport 6.44`

Description

Display port configuration for Frame Relay port 6.44 (a Port Concentrator port).

System Response

singha TN SuperUser IPX 32 9.1 July 7 1997 13:38 GMT

```
Port: 6.44 [FAILED]
Interface: V.11 DCE Configured Clock: 38.4 Kbps
Clocking: Normal Startup Rx Clock: 0 Kbps
Min Flags / Frames 1
Port ID 0
Port Queue Depth 65535 OAM Pkt Threshold 3 pkts
ECN Queue Threshold 65535 T391 Link Intg Timer 10 sec
DE Threshold 100 % N391 Full Status Poll 6 cyl
Signalling Protocol None EFCI Mapping Enabled No
Asynchronous Status No CLLM Enabled/Tx Timer No/ 0 msec
T392 Polling Verif Timer 15 IDE to DE Mapping Yes
N392 Error Threshold 3 Interface Control Template
N393 Monitored Events Count 4 Lead I
Communicate Priority No State ON
Upper/Lower RNR Thresh 75%/ 25%
```

Last Command: dspfrport 6.44

Next Command:

dspfrcport

Displays physical port configuration for FRM-2 or FRP-2 ports connected to a Port Concentrator. The following is a list of possible displayed parameters for a port.

Note The screen displayed with this command includes fields for standard Frame Relay ports on the FRM card. Only the fields in the following table have meaning for a Port Concentrator.

Table 8-33 dspfrcport—Displayed PCS Parameters

Field	Meaning
Interface	Always <i>FRI-X.21 DCE</i> for PCS ports.
Clocking	Always <i>Normal</i> for PCS ports.
Port Type	Specifies port type, always FR (Frame Relay) for PCS ports.
Port ID	Specifies the DLCI for the port, always 1022 for PCS ports.
Port Queue Depth	Specifies the maximum bytes queued for transmission from the FRM-2 or FRP-2 port. The range is 0–65535; 65535 is the default.
DE Threshold	Specifies the port depth queue above which frames with the Discard Eligibility bit set will be discarded. Valid entries are 0–100%, with a default of 100%. 100% effectively disables DE for the port.
Signaling Protocol	For Frame Relay ports, specifies LMI operation mode. For PCS ports, this is set to <i>None</i> .
Measured Rx Clock	The actual speed of received data as clocked by the FRM-2 or FRP-2. Under normal operation, this should always display the fixed concentrated link speed of 512 Kbps. Clock speed is measured by the FRM-2 or FRP-2 once per minute.
Concentrated Link Util	Current utilization percentage of the concentrated link. Utilization is defined as the percentage of the fixed link speed (512K) used for data. Since the maximum allowable aggregate for each link's 11 ports is 448 Kbps, 88% is the maximum value for this field.
Min Flags / Frames	Specifies the minimum number of flags per frame. All values greater than zero are valid; the default is 1.
OAM Pkt Threshold	Specifies the OAM FastPackets used within the local node to transmit the NNI status from the remote network. The range of values is 0–15 packets. The default is 3. A 0 disables this function.

Full Name

Display FRC-2/FRM-2 port configuration

Syntax

dspfrcport <slot.port> <interval>

Related Commands

dspfrcport, **dspbob**

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1

dspfrport 3.1

Description

Display the configuration of port 3.1.

System Response

```

tecate          LAN   SuperUser      IPX 16 9.1      Aug. 6 1997 10:25 PST
Physical Port:      3.1      [ACTIVE]
Interface:      FRI-X.21 DCE
Clocking:       Normal
Port Type       FR
Port ID         1022
Port Queue Depth 65535
ECN Queue Threshold 65535
DE Threshold    100 %
Signalling Protocol None
Asynchronous Status No
T392 Polling Verif Timer 15
N392 Error Threshold 3
N393 Monitored Events Count 4
Communicate Priority No
Upper/Lower RNR Thresh 75%/ 25%
Configured Clock: 512 Kbps
Measured Rx Clock: 512 Kbps
Min Flags / Frames 1
OAM Pkt Threshold 3 pkts
T391 Link Intg Timer 6 sec
N391 Full Status Poll 10 cyl
ForeSight (CLLM) No
CLLM Status Tx Timer 0 msec
IDE to DE Mapping Yes
Interface Control Template
Lead I
State ON
Concentrated Link Util 88%

```

Last Command: dspfrport 3.1

Next Command:

Table 8-34 dspfrport-Parameters

Parameter	Description
slot.port	Specifies the physical slot and port of the Frame Relay card set. The range is 1-4.
interval	Specifies the screen update interval in seconds. The default is five seconds

dspict

Displays interface control template information for data channels and Frame Relay ports. The information includes:

The specified channel.

The type of template: a, c, l, n, or f.

The associated output leads and their status:

ON.

OFF.

Following a local input.

Following a remote input.

For Frame Relay ports, the entire port configuration screen is displayed (see **dspfrport** command). The input being followed is specified, when applicable. Any RTS to CTS delay is also shown.

Full Name

Display interface control template

Syntax

dspict <port> <template>

Related Commands

cnfict, **cpyict**

Attributes

Privilege	1–2
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1

```
dspict 25.1 a
```

Description

Display the active interface control template for channel 25.1.

System Response

```
beta          TRM   YourID:1          IPX 32    9.1    Aug. 15 1997 17:33 MST
```

```
Data Channel:    25.1
Interface:       RS232   DCE
Clocking:        Normal
```

Interface Control Template for Connection while ACTIVE

Lead	Output Value	Lead	Output Value
RI	OFF	DSR	ON
CTS	ON	SRxD	ON
DCR	OFF	DCD	ON
SCTS	ON	SDCD	ON
SQ	ON		

Last Command: dspict 25.1 a

Next Command:

Example 2

```
dspict 9.1 a
```

Description

Display the Frame Relay data channel 9.1 interface control template.

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 10:26 PST
```

```
Port:          9.1          [ACTIVE ]
Interface:     FRI-V35 DTE          Configured Clock: 256 Kbps
Clocking:      Normal          Measured Rx Clock: 0 Kbps
Port ID                7
Port Queue Depth      65535          OAM Pkt Threshold      3 pkts
ECN Queue Threshold   65535          T391 Link Intg Timer   6 sec
DE Threshold          100 %          N391 Full Status Poll  10 cyl
Signalling Protocol   None          ForeSight (CLLM)       No
Asynchronous Status   No          CLLM Status Tx Timer   0 msec
T392 Polling Verif Timer 15          Interface Control Template
N392 Error Threshold   3          Lead      State
N393 Monitored Events Count 4          RTS       ON
Communicate Priority   No          DTR       ON
Upper/Lower RNR Thresh 75%/ 25%
Min Flags / Frames    1
```

Last Command: dspict 9.1 a

Next Command:

Table 8-35 dspict-Parameters

Parameter	Description
port	Specifies the physical slot and port of the Frame Relay card set.
template	Specifies the template. Choices are a, c, n, l, and f.

dspmode

Displays the *mode* of the card. The mode applies only to a UFM-U back card. The UFM-U back cards are the UFI-12V.35, UFI-12X.21, and UFI-4HSSI. A card mode is a combination of maximum port speeds and for specific port numbers. Table 8-36 lists the maximum port speeds and active ports for each mode. For a description of the UFM-U modes, see the UFM-U description in the *Cisco IGX 8400 Series Reference*.

Table 8-36 Card Modes for Unchannelized Back Cards

Mode	V.35 and X.21 Ports												HSSI Ports			
	Group A				Group B				Group C				1	2	3	4
	1	2	3	4	5	6	7	8	9	10	11	12				
1	3	3	3	3	3	3	3	3	3	3	3	3	8	8	8	8
2	8	-	8	-	8	-	8	-	8	-	8	-	16	-	16	-
3	10	-	-	-	10	-	-	-	10	-	-	-	16	-	-	-
4	8	-	8	-	3	3	3	3	3	3	3	3				
5	10	-	-	-	3	3	3	3	3	3	3	3				
6	8	-	8	-	8	-	8	-	3	3	3	3				
7	10	-	-	-	8	-	8	-	3	3	3	3				
8	10	-	-	-	10	-	-	-	3	3	3	3				
9	10	-	-	-	8	-	8	-	8	-	8	-				
10	10	-	-	-	10	-	-	-	8	-	8	-				
11	3	3	3	3	8	-	8	-	3	3	3	3				
12	3	3	3	3	3	3	3	3	8	-	8	-				
13	3	3	3	3	10	-	-	-	3	3	3	3				
14	3	3	3	3	3	3	3	3	10	-	-	-				
15	8	-	8	-	3	3	3	3	8	-	8	-				
16	3	3	3	3	8	-	8	-	8	-	8	-				
17	8	-	8	-	10	-	-	-	3	3	3	3				
18	8	-	8	-	3	3	3	3	10	-	-	-				
19	3	3	3	3	8	-	8	-	10	-	-	-				
20	3	3	3	3	10	-	-	-	8	-	8	-				
21	10	-	-	-	3	3	3	3	8	-	8	-				
22	10	-	-	-	3	3	3	3	10	-	-	-				
23	3	3	3	3	10	-	-	-	10	-	-	-				
24	8	-	8	-	10	-	-	-	8	-	8	-				
25	8	-	8	-	8	-	8	-	10	-	-	-				
26	10	-	-	-	8	-	8	-	10	-	-	-				
27	8	-	8	-	10	-	-	-	10	-	-	-				

Full Name
Display mode

Syntax
dspmode <slot>

Related Commands
cnffrport, cnfmode, dspmodes

Attributes

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

Example 1
dspmode 13

Description
Display the mode of the UFM-U in slot 13.

System Response

```
swl80          TN      SuperUser      IGX 16      9.1 July 30 1997 01:39 GMT

                                UFMU Card Mode Configuration

Slot Number    Configured Mode    Available Ports    Currently Activated Ports
-----
13             1                  [1111111111111]   [1000000000000]
```

Last Command: dspmode 13

Next Command:

Table 8-37 **dspmode-Parameters**

Parameter	Description
slot	Specifies the slot of the UFM-U card.

dspmodes

Displays the ports that are active with each *mode* of an unchannelized UFM. The mode applies only to a UFM-U back card. The UFM-U back cards are the UFI-12V.35, UFI-12X.21, and UFI-4HSSI. A card mode is a combination of maximum port speeds and specific port numbers. Refer to the description of **dspmode** for the table that lists the maximum port speeds and active ports for each mode. For a description of the UFM-U modes, see the UFM-U description in the *Cisco IGX 8400 Series Reference*.

The **dspmodes** command takes no parameters. Also, note that only the first three modes apply to a UFI-4HSSI.

Full Name

Display mode

Syntax

dspmode

Related Commands

cnffrport, cnfmode, dspmode

Attributes

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

Example 1

```
dspmodes
```

Description

Display the possible modes.

System Response

```
sw180          TN    SuperUser      IGX 16      9.1 July 30 1997 01:39 GMT
```

UFMU Card Mode Configuration

Slot Number	Configured Mode	Available Ports	Currently Activated Ports
13	1	[111111111111]	[100000000000]

Last Command: dspmode 13

Next Command:

dsppcs

Displays status and level information for either a specific Port Concentrator Shelf or all Port Concentrators attached to the node. When the command has a specific slot number for an argument, information appears for each concentrated link. The information for each concentrated link is as follows (see also Example 1):

Status, where “OK” means the FRM-2 or FRP-2 is communicating with the PCS, and “Failed” means the FRM-2 or FRP-2 is not communicating with the PCS on the concentrated link.

- Status, where “OK” means the FRM-2 or FRP-2 is communicating with the PCS, and “Failed” means the FRM-2 or FRP-2 is not communicating with the PCS on the concentrated link.
 - No Test means no test (**tstpcs** command) has occurred since last reset.
 - Passed means the last PCS test (**tstpcs** command) detected no errors in the PCS hardware.
 - Failed means the last PCS test (**tstpcs** command) detected errors in the PCS hardware.
 - Testing means a test (**tstpcs** command) is in progress.
- FW Revision is the firmware revision of the PCS module.
- Boot PROM Date is the boot firmware date of PCS module.
- Boot PROM Revision is the boot firmware revision of PCS module.

When the command executes without a specified slot, a general status statement and the firmware revision for each port appear (see Example 2).

Full Name

Display Port Concentrator Shelf

Syntax

dspport [slot]

Related Commands

cnffrport, dspfrport, dspfrbob, dspportstats

Attributes

Privilege	1-3
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1

dsppcs 6

Description

Display PCS information for port 6.

System Response

```
singha          TN      SuperUser      IPX 32      9.1      July 7 1997  14:04 GMT
```

```
Detailed Port Concentrator Display For FRP in slot 6
```

Link Number:	1	Link Number:	3
Status:	Failed	Status:	OK
Test Status:	No Test	Test Status:	Passed
FW Revision:		FW Revision:	P3
Boot PROM Date:		Boot PROM Date:	11/9/95
Boot PROM Revision:		Boot PROM Revision:	P3

Link Number:	2	Link Number:	4
Status:	Failed	Status:	OK
Test Status:	No Test	Test Status:	Passed
FW Revision:		FW Revision:	P3
Boot PROM Date:		Boot PROM Date:	11/9/95
Boot PROM Revision:		Boot PROM Revision:	P3

```
Last Command: dsppcs 6
```

```
Next Command:
```

Example 2

dsppcs

Description

Display information for all Port Concentrator Shelves.

System Response

```
singha          TN      SuperUser      IPX 32      9.1      July 7 1997  14:02 GMT
```

Port Concentrator Status

Slot.Port	Status	FW Revision
6.1	Failed	
6.2	Failed	
6.3	OK	P3
6.4	OK	P3

Last Command: dsppcs

Next Command:

Table 8-38 dsppcs—Optional Parameters

Parameter	Description
slot	Specifies slot associated with the ports you want to display.

dspportids

Displays *port IDs*. The port ID is a user-specified identifier for a particular Frame Relay port where several virtual circuits share the same physical interface. The port ID can be any numeric value in the range 1–1024. The command for specifying a port ID is **cnffrport**. Note that a Port Concentrator does not use port IDs.

Full Name

Display port IDs

Syntax

dspport IDs

Related Commands

cnffrport

Attributes

Privilege	1–2
Jobs	No
Log	No
Node	IPX, IGX
Lock	No

Example 1

```
dspportids
```

Description

Display the port IDs throughout the network.

System Response

```
alpha          TRM  YourID:1          IPX 16    9.1    Aug. 15 1997 15:55 PST
```

```
Frame Relay Port IDs
```

```
ID  Node
7   alpha  |
9   alpha  |
```

dsportids

Last Command: dsportids

Next Command:

dspportstats

Displays a summary of port statistics for a Frame Relay port. Statistics include the data byte count in the transmit and receive directions and error counts associated with the port. The display indicates the date and time the statistics were cleared and the amount of time since the node last cleared the statistics. *Bytes transmitted* indicates the amount of data transmitted from the port to the user device. *Bytes received* indicates the amount of data received at the port from the user device.

Corrupted statistics result from channel/port loopbacks or port tests. A “yes” in this field indicates that loopback or port tests have occurred since the statistics were last cleared. The statistics for User-to-Network Interface (UNI) ports (connections to user devices) are displayed with one screen. The following lists usage statistics displayed in screen 1.

Table 8-39 UNI Port Statistics for Frame Relay

Frame Errors	LMI Statistics	Miscellaneous Statistics
Invalid CRC	Status Enquiries Received	Average TX Port Q
Invalid Alignment	Status Xmit	FECN Frames
Invalid Frame Length	Update Xmit	FECN Ratio (%)
Invalid Frame Format	Invalid Requests	BECN Frames
Unknown DLCIs	Sequence # Mismatches	BECN Ratio (%)
Last Unknown DLCI	Timeouts	Resource Overflow
	Signaling Protocol	DE Frames Dropped

Network to Network (NNI) ports require two screens to display all the parameters. The first screen is the same as described previously for UNI ports; you display the second screen by responding with a “y” for yes to the Continue? prompt. The second screen compares receive LMI statistics with transmit LMI statistics. The LMI receive statistics are repeated from the middle column of the first screen and displayed again for easy comparison. The following lists the usage statistics in screen 2.

Table 8-40 LMI Statistics for Frame Relay

LMI Receive Protocol Stats	LMI Transmit Protocol Stats
Status Enquiries Received	Status Inquiries Transmitted
Status Transmitted	Status Received
Asynchronous Status Transmitted	Asynchronous Status Received
Sequence # Mismatches	Sequence # Mismatches
Timeouts	Timeouts
Invalid Frames	
Signaling Protocol	

The command displays the following statistics: frame error, LMI, and miscellaneous. A summary and description of these statistics follows:

Table 8-41 Frame Error Statistics

Statistics	Description
CRC errors	Based on a CRC CCITT 16-bit frame check sequence, which is a cyclic redundancy check. If the frame received at a port has an incorrect CRC, it is flagged as a CRC error, and the frame is discarded.
Alignment error	Frame was not an integral number of bytes.
Frame length errors	Frames < 5 bytes or >4096 bytes.
Frame format errors	Occurs when either of the least significant bits in the first two bytes of the Frame Relay header are set incorrectly. These two bytes are the frame's address field. The first byte's least significant bit is defined to be a zero, meaning that there is a second byte to the address. The second byte's least significant bit is defined to be a one, meaning this is the last byte of the address because it's a two byte address field.
Unknown DLCI	Occurs when a frame arrives at a Frame Relay port and the DLCI has not been mapped and the frame is discarded.
Last unknown DLCI	Displayed so that the user can see the unknown DLCI.

Table 8-42 LMI Statistics

Statistics	Description
Status inquiries transmitted/received	The number of Status Inquiry messages transmitted and received from the user device.
Status transmit/received	The number of Status messages sent to the user device.
Async status Xmit	The number of asynchronous status messages sent to the user device.
Invalid requests	The number of invalid requests received from the user device.
Timeouts	The number of LMI protocol timeouts.
Sequence number mismatches	The number of LMI protocol sequence number mismatches.
Signaling protocol	The protocol selected for this Frame Relay port interface, Cisco LMI, Annex A UNI, Annex D UNI, Annex A NNI, or Annex D NNI.

Table 8-43 Miscellaneous Frame Relay Usage Statistics

Miscellaneous Statistics	
Statistics	Description
Average queue depth	The average fill of the VQ queue at the input of the FRP or FRM.
BECN frames	Number Explicit Congestion Notification frames transmitted to the receiving router. Number of Explicit Congestion Notification frames transmitted to the transmitting router. Percentage of BECN frames sent to the total number of frames sent.
FECN frame	The percentage of FECN frames sent to the total number of frames sent.
Rsrc overflow	Resource overflow indicates the number of times the port shut down due to receive frame buffer overflow or receive queue entries.
DE Frames Dropped	The total number of frames with Discard Eligibility that were discarded.

Full Name

Display Frame Relay port statistics

Syntax**dspportstats** <slot.port> [interval]**Related Commands****clrportstats****Attributes**

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

Example 1**dspportstats 4.1****Description**

Display the port statistics for Frame Relay port 4.1.

System Response

alpha32 LAN SuperUser IPX 32 9.1 Aug. 21 1997 12:44 PST

Port Statistics for 4.1 Cleared: Aug. 21 1997 09:45 Snapshot
Port Speed: 256 kbps Collection Time: 0 day(s) 02:56:48 Corrupted: NO

	Bytes	Average (kbps)	Util (%)	Frames
From Port:	0	0	0	0
To Port:	0	0	0	0
Frame Errors				
Invalid CRC	0	LMI Receive Protocol Stats	Misc Statistics	
Invalid Alignment	0	Status Enq Rcvd	0	Avg Tx Port Q 0
Invalid Frm Length	0	Status Xmit	0	FECN Frames 0
Invalid Frm Format	0	Asynch Xmit	0	Ratio (%) 0
Unknown DLCIs	0	Seq # Mismatches	0	BECN Frames 0
Last Unknown DLCI	0	Timeouts	0	Ratio (%) 0
		Invalid Req	0	Rsrc Overflow 0
		Sig Protocol: None		DE Frms Dropt 0

Last Command: dsportstats 4.1

Continue to next page? (y/n)

Enter "y" to see subsequent screens.

alpha32 LAN SuperUser IPX 32 9.1 Aug. 21 1997 12:49 PST

Port Statistics for 4.1 Cleared: Aug. 21 1997 09:45
Port Speed: 256 kbps Collection Time: 0 day(s) 03:03:42 Corrupted: NO

	Bytes	Average (kbps)	Util (%)	Frames
From Port:	0	0	0	0
To Port:	0	0	0	0
LMI Receive Protocol Stats		LMI Transmit Protocol Stats		CLLM (ForeSight) Stats
Status Enq Rcvd	0	Status Enq Xmit	--	Frames Rcvd --
Status Xmit	0	Status Rcd	--	Bytes Rcvd --
Asynch Xmit	0	Asynch Rcvd	--	Frames Xmt --
Seq # Mismatches	0	Seq # Mismatches	--	Bytes Xmt --
Timeouts	0	Timeouts	--	CLLM Failures --
Invalid Frames	0			

Sig Protocol: None

This Command: dsportstats 4.1

Hit DEL key to quit:

Table 8-44 dspportstats–Parameters

Parameter	Description
slot	Specifies the Frame Relay card set slot.
port	Specifies the port on the back card. The range is 1–4 for the FRI-V.35 or FRI-X.21 back cards. For channelized ports, the range is 1–24 or 1–31 for a FRI-T1 or FRI-E1, respectively, and 1-250 for a UFI back card.

Table 8-45 dspportstats–Optional Parameters

Parameter	Description
interval	Specifies the refresh interval time for data. The range is 1–60 seconds. The default interval is 1 second.

dsprtcache

New in Release 9.1, this command displays the cache of all cost-based routing connections. The optional 'index' parameter lets you specify a cache entry index. The optional 'c' parameter clears the cache. The information displayed includes:

Full Name

Display cost-based route cache

Syntax

dsprtcache [index] [c]

[index] specifies the cache entry index

[c] specifies to clear the entire cache or a single entry

Related Commands

dsprcon, cnfrtcost, cnfpref

Attributes

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

Example 1

dsprtcache

Description

Display route cache contents, and let you monitor and manually clear the cache.

System Response

```

pissaro TN StrataCom BPX 15 9.1 Jun. 18 1997 11:11 GMT
Route Cache (Summary)
  Index Use # Cost Delay Restrict Load VPC Hops RemoteNode
0 Yes 1 Yes No None VBR No 2 lautrec
1 Yes 6 Yes No *s BDB No 3 vangogh
2 Yes 9 Yes No None BDA No 3 matisse
3 Yes 3 Yes No *t BDB No 3 rousseau
4 Yes 1 Yes No None CBR No 3 seurat <- current
5 No 0 No No None --- No 0 ---
6 No 0 No No None --- No 0 ---
    
```


7	No	0	No	No	None	---	No	0	---
8	No	0	No	No	None	---	No	0	---
9	No	0	No	No	None	---	No	0	---
10	No	0	No	No	None	---	No	0	---
11	No	0	No	No	None	---	No	0	---

Last Command: dsprtcache

Next Command:

Table 8-46 dsprtcache-Parameters

Parameter	Description
index	Specifies a particular route entry within the cache. When used with the c parameter, the route is either displayed or cleared from the cache.
c	Clears the cache, or if you also enter the index parameter, clears the route cache specified by the index number.

prtchcnf

Prints the configuration details for voice channels or data channels. This command uses the same syntax, and prints the same information as is displayed using the **dspchcnf** command. See the **dspchcnf** command for syntax and output information.

Full Name

Print channel configurations

Syntax

prtchcnf [start_channel] (see **dspchcnf** description)

Related Commands

dspschcnf

Attributes

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

prtcons

Prints a summary of connections terminated at the IPX or IGX node. This command uses the same syntax and prints the same information as is displayed using the **dspcons** command. See the **dspcons** command for syntax and output information.

Full Name

Print connection

Syntax

prtcons [start_channel] [nodename] [type] [+d]

Related Commands

dspcons

Attributes

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

Table 8-47 prtcons--Optional Parameters

Parameter	Description
start channel	<p>Specifies the channel to begin the display. Specify <i>start channel</i> in one of the following formats:</p> <p><i>slot.port.DLCI</i> (Frame Relay channel) <i>remote node.group_name</i> (Frame Relay group connection)</p> <p>If no starting channel is specified, the display begins with the first connected channel.</p>
node name	<p>Specifies that only connections to the remote node from the local node are displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed.</p>
-v	Voice only.
-d	Data only.
-f	Frame relay only.
-atfr	Interworking connections.
-g	Grouped connections.
+d	Connection descriptor.
-abit	A-bit status.
-fabit	A-bit errors.
-fail	Failed connections.
-down	Downed connections.
type	<p>Types listed in Syntax section. The state that may be displayed for Frame Relay and NNI connection types includes:</p> <p>OK:Connection OK, A-bit = 1. FAILED:Connection failed, A-bit = 0. MISSING: DLCI was deleted in other network NNI. A previous status report indicated a valid DLCI present but an updated report did not. UNUSED: The UNI port does not support reporting of NNI A-bit status.</p>

prtict

Prints a data channel's interface control template. The **prtict** command uses the same syntax and prints the same information as **dspict**. See the **dspict** description for output information.

Full Name

Print interface control template

Syntax

prtict <port> <template>

Related Commands

dspict

Attributes

Privilege	1-2
Jobs	Yes
Log	No
Node	IPX, IGX
Lock	Yes

Table 8-48 prtict-Parameters

Parameter	Description
port	Specifies the physical slot and port of the Frame Relay card set.
template	Specifies the template. Choices are a, c, n, l, and f.

upfrport

Activates a port on a Frame Relay card. The applicable cards are all versions of the FRP, FRM, and UFM series of cards. If the port has not been configured through the **cnffrport** command, a set of default configuration values apply.

With a Port Concentrator Shelf (PCS), *upping* the first port causes the FRP-2 or FRM-2 to begin communicating with the four PCS modules and to download code to them if necessary.

Full Name

Up Frame Relay port

Syntax

For UFM-U, FRM, or FRP: **upfrport** <slot.port>

For UFM-C: **upfrport** <slot.port> <line>

Related Commands

dnfrport, **cnffrport**

Attributes

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

Example 1

upfrport 9.2

Description

Activate port 2 on the FRP in slot 9.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 15 1997 15:51 PST

Port:          9.2          [ACTIVE ]
Interface:     FRI-V35 DTE          Configured Clock: 256 Kbps
Clocking:      Normal          Measured Rx Clock: 0 Kbps
Port ID       0
Port Queue Depth 65535          OAM Pkt Threshold 3 pkts
ECN Queue Threshold 65535          T391 Link Intg Timer 6 sec
DE Threshold   100 %          N391 Full Status Poll 10 cyl
Signalling Protocol None          ForeSight (CLLM) No
Asynchronous Status No          CLLM Status Tx Timer 0 msec
T392 Polling Verif Timer 15          Interface Control Template
N392 Error Threshold 3          Lead State
N393 Monitored Events Count 4          RTS ON
Communicate Priority No          DTR ON
Upper/Lower RNR Thresh 75%/ 25%
Min Flags / Frames 1

Last Command: upfrport 9.2

Next Command:

```

Table 8-49 upfrport-Parameters

Parameter	Description
slot	Specifies slot number of the card containing the port.
port	Specifies the port. The ranges are: 1–250 on a UFM-C 1–12 on UFM-U with a UFI-12V.35 or UFI-12X.21 1–4 on UFM-U with a UFI-4HSSI 1–4 on an FRP or FRM 1–44 on an FRP-2 or FRM-2.
line	Applies to UFM-C only. The line is the physical connector. The range is 1–8 for T1 or E1.

ATM Connections

This chapter describes the ATM commands that activate and configure ATM connections as well as statistical reporting for these connections at an ATM UNI in a BPX or IGX node. You can add ATM connections to an ASI or BXM in a BPX node or to an ALM/A in an IGX node. Table 9-1 lists the ATM UNI card combinations for BPX and IGX nodes. For details regarding ATM commands and other support on an MGX 8220 shelf, refer to the MGX 8220 documentation.

Table 9-1 ATM UNI Cards

Front Card	Back Card
ALM/A	BC-UAI-1T3 or BC-UAI-1E3
ASI-T3	LM-2T3 (Two ports)
ASI-E3	LM-2E3 (Two ports)
ASI-155	MMF-2-BC, SMF-2-BC, or SMF LR-2-BC
UXM	UAI-4OC3MMF, UAI-4OC3SMF, UAI-2OC3SMF, UAI-8T1-IMA DB15, UAI-8E1-IMA DB15, UAI-8E1-IMA BNC
BXM-T3-8 or BXM-T3-12	BPX-T3/E3-8/12 (a universal back card for BXM-T3 or E3)
BXM-E3-8 or BXM-E3-12	BPX-T3/E3-8/12 (a universal back card for BXM-T3 or E3)
BXM-155-4	MMF-155-4, SMF-155-4, or SMFLR-155-4
BXM-155-8	MMF-155-8, SMF-155-8, or SMFLR-155-8
BXM-622	SMF-622 or SMFLR-622
BXM-622-2	SMF-622-2 or SMFLR-622-2

Setting Up an ATM Connection

To set up an ATM connection, perform the following steps:

- Step 1** Activate a line with the **upln** command. Activation makes the line available for you to configure it and causes statistics gathering to begin. Subsequently, you can begin to add connections with **addcon**. You can verify activation with the **dsplns** command. (See the chapter titled “Setting Up Lines” for descriptions of **upln** and **dsplns**.)
- Step 2** Activate the ATM port with the **upport X.X** command, where X.X is the slot and port of the ATM card set.
- Step 3** Use the **cnfport** command to establish the characteristics for the ATM port.

- Step 4** If a suitable class is already configured, note its number and use this class when adding the ATM connection with the **addcon** command. (The **dspcls** command displays the parameters for each connection class. The **cnfcls** command allows an individual class to be modified.)
- Step 5** Use the **vt** command to log in to the node at the remote end of the proposed ATM connection.
- Step 6** At the remote node, use the **upline**, **upport** and **cnfport** commands, as listed in steps 1 and 2 to activate and configure the remote port.
- Step 7** Use the **addcon** command at one end of the connection to activate the ATM connection.

Managing Bandwidth

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

- `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.
- `upcon, dncon` The up and down connection commands can be used to temporarily down connections, thus releasing bandwidth for other services. Often it is possible to down some voice connections to provide more bandwidth for data, frame relay, or ATM traffic.

Other Commands

The following commands may be useful for establishing connections.

- `delcon` Deletes a connection from an ATM line.
- `dspscons` Displays the connections on a specified ATM line.
- `dsplnutl` Displays the line utilization for an ATM line.

Summary of Commands

Table 9-2 shows the name of each ATM connection command and starting page of its description.

Table 9-2 ATM Connection Commands

Mnemonic	Description	Page
addcon	Add connection	9-6
clrchstats	Clear channel statistics	9-18
cnfabrparm	Configure ABR parameters (applies to BXM)	9-20
cnfatmcls	Configure ATM class	9-22
cnfcls	Configure class	9-25
cnfport	Configure port	9-30
cnfportq	Configure port queue	9-33
delcon	Delete connection	9-35
dnport	Down port	9-37
dspatmcls	Display ATM class	9-39
dspchstats	Display channel statistics	9-41
dspcls	Display class	9-45
dspcon	Display connection	9-47
dspconcnf	Display connection configuration	9-51
dspcons	Display connections	9-53
dsplmistats	Display LMI statistics	9-57
dspport	Display port	9-59
dspportq	Display port queue	9-61
dspportstats	Display Port Statistics	9-63
upport	Up port	9-65

addcon

Establishes an ATM connection between the current node and one or more nodes in the network. You can add ATM connections at a UNI port on either an ASI or a port-mode BXM in a BPX node or an ALM/A in an IGX node. When used with the syntax in this chapter, **addcon** adds either a standard ATM connection or an ATM-frame relay interworking connection. For a description of the **addcon** command as it applies to frame relay connections, voice connections, or serial data connections, refer to the chapter in this manual that describes the applicable traffic type. For descriptions of the ATM commands that operate on an MGX 8220 shelf, see the MGX 8220 documentation.

The **addcon** command for ATM adds any one of the following types of ATM connections:

- Constant Bit Rate (CBR)
- Variable Bit Rate (VBR)
- Frame relay-to-ATM interworking connection (ATFR)
- Frame relay-to-ATM interworking with ForeSight (ATFST) connection
- Available Bit Rate according to ATM Forum standards (ABRSTD)
- Available Bit Rate with ForeSight (ABRFST)
- Unspecified Bit Rate (UBR)

This description has the following explanations in the form of figures and tables

- Flow diagrams showing the sequence of parameter prompts for each connection type
 - Figure 9-1 shows the prompt sequence for CBR connections.
 - Figure 9-2 shows the prompt sequence for VBR connections.
 - Figure 9-3 shows the prompt sequence for ATFR connections.
 - Figure 9-4 shows the prompt sequence for ATFST connections
 - Figure 9-5 shows the prompt sequence for ABRSTD connections.
 - Figure 9-6 shows the prompt sequence for ABRFST connections.
 - Figure 9-7 shows the prompt sequence for UBR connections.
- A table that names each type of policing
- A table showing each connection parameter, possible values, and defaults
- A table with a brief definition of each connection parameter
- Example screens from the command line interface

For detailed descriptions of the connection types, traffic classes, policing, and ATM-related topics, refer to the *Cisco BPX 8600 Series Reference*, the *Cisco WAN Switching System Overview*, and the ATM Forum specifications.

The node on which **addcon** executes is the “owner” of the connection. Connection ownership is important because automatic rerouting and preferred routing information is entered on the node that owns the connection. See the **cnfpref** and **cnfcos** descriptions for details on automatic rerouting.

The parameter prompts depend on the connection type. The figures on this and the following pages are flow diagrams showing the sequence of possible parameter prompts according to the connection type. The flow diagrams begin at the point after you have entered the remote node name and VPI and VCI (which are common parameters). The subsequent tables define the parameters and list the defaults and ranges for each parameter.

A form of notation appears for some parameters that may need explanation. The notation is either (0), (1), or (0+1). This refers to the state of the Cell Loss Priority (CLP) bit. The usage of the CLP bit is in the traffic policing schemes. (0+1) means cells with CLP=0 or 1. (0) means cells with CLP=0. (1) means cells with CLP=1. The CLP bit is used in different contexts. For example, CDVT (0+1) refers to Cell Delay Variation Tolerance (CDVT) for cells with CLP=0 or 1.

Before a connection is added, the proposed connection appears on the screen with a prompt for confirmation. After **addcon** executes, the system software automatically routes the connection.

Figure 9-1 Prompt Sequence for a CBR Connection

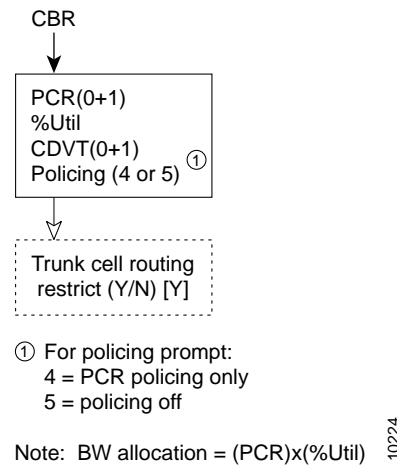


Figure 9-2 Prompt Sequence for a VBR Connection

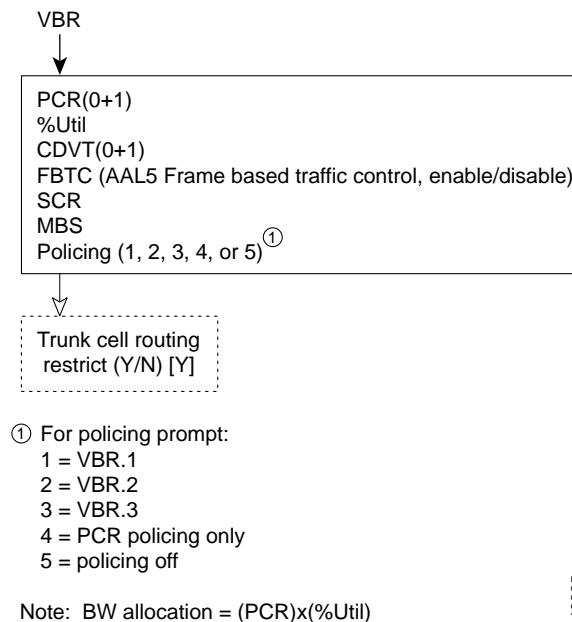
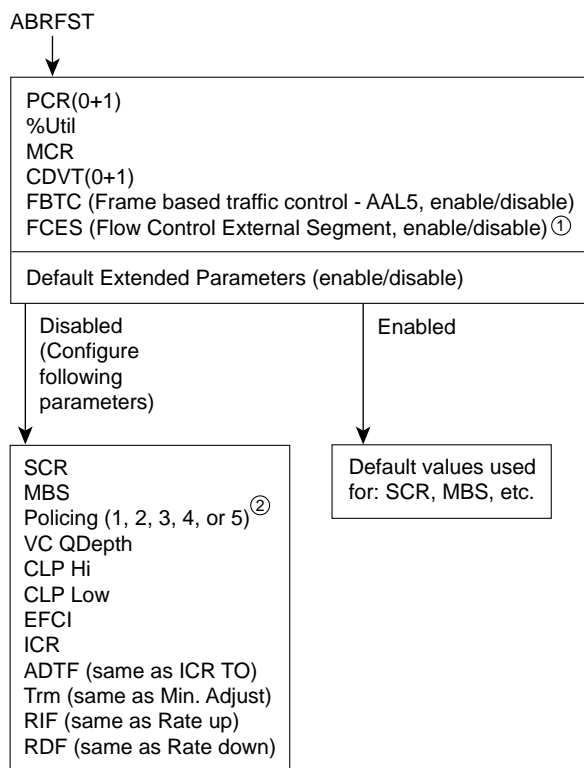


Figure 9-3 Prompt Sequence for an ATFR Connection

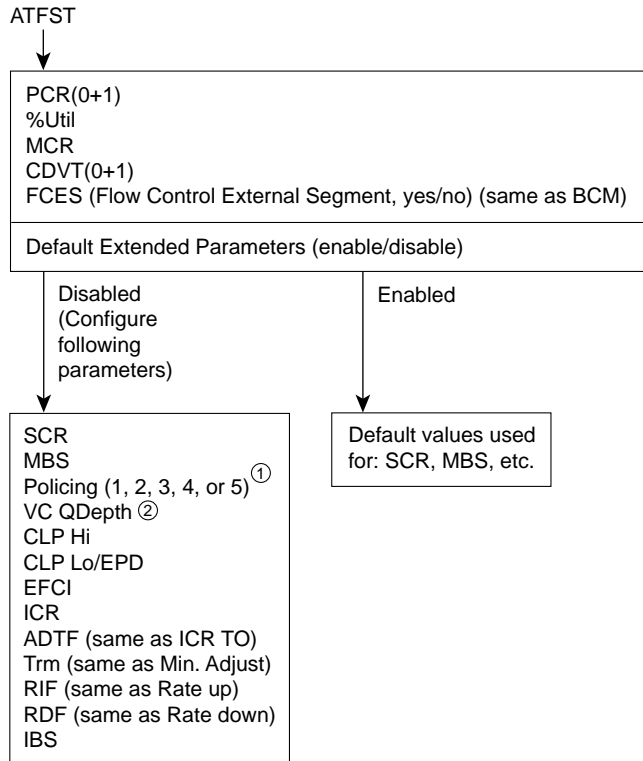


① At present, FCES is not available for ABR with ForeSight

② For policing prompt:
 1 = VBR.1
 2 = VBR.2
 3 = VBR.3
 4 = PCR policing only
 5 = policing off

Note: Bandwidth allocation
 = (MCR)x(%Util)

S66163

Figure 9-4 Prompt Sequence for a ATFST Connection

① For policing prompt:

- 1 = VBR.1
- 2 = VBR.2
- 3 = VBR.3
- 4 = PCR policing only
- 5 = policing off

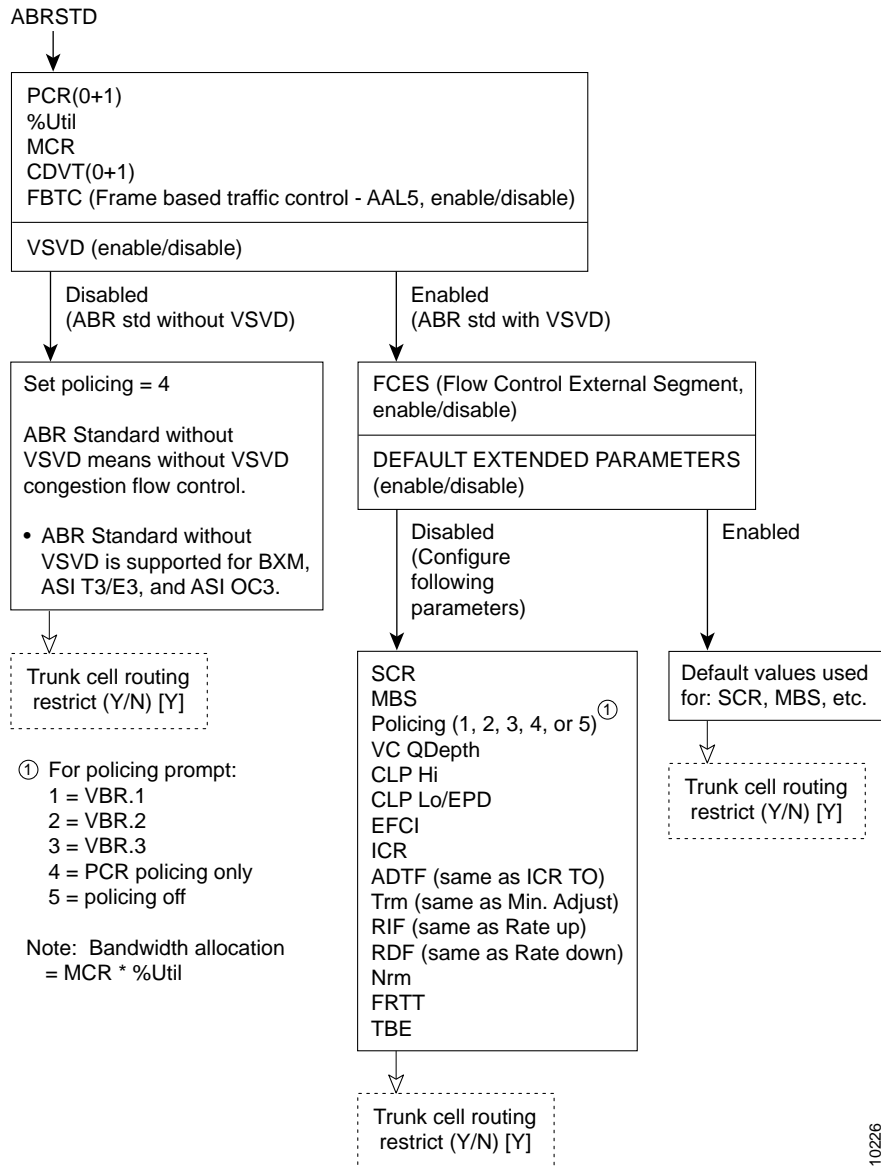
② VC QDepth maps to VC Queue max for frame relay.

- EFCI maps to ECN for frame relay.
- IBS maps to C max for frame relay.

Note: FBTC (Frame based traffic control - AAL5, same as FGCRA) is automatically set to yes.

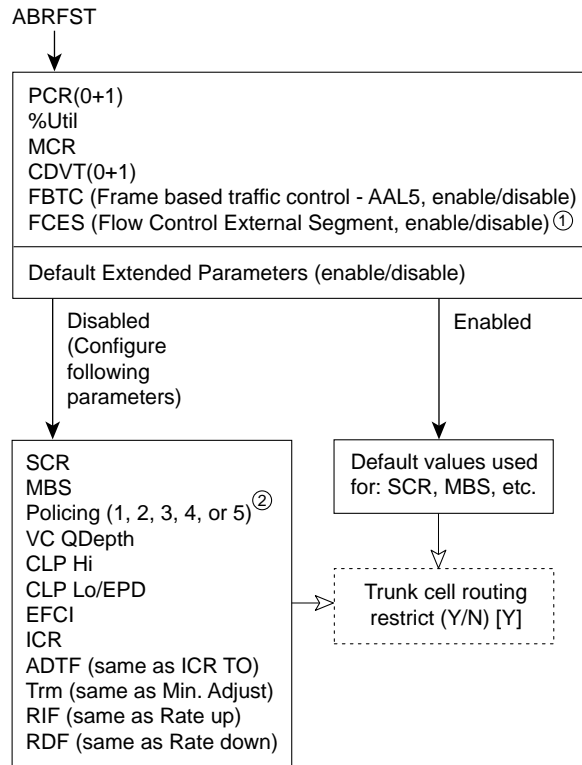
S6164

Figure 9-5 Prompt Sequence for an ABRSTD Connection



10226

Figure 9-6 Prompt Sequence for ABRFST Connection



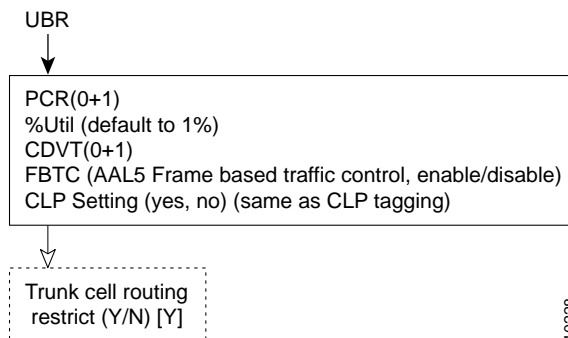
① At present, FCES is not available for ABR with ForeSight

- ② For policing prompt:
 1 = VBR.1
 2 = VBR.2
 3 = VBR.3
 4 = PCR policing only
 5 = policing off

Note: Bandwidth allocation
 = (MCR)x(%Util)

10227

Figure 9-7 Prompt Sequence for a UBR Connection



10228

Table 9-3 contains descriptions of the ATM parameters that appear on screen. Table 9-4 gives the defaults, ranges (or values), and applicable connection type (marked with an X) for each parameter. Table 9-5 gives a shorthand definition of each type of traffic policing. In Table 9-5, note that VBR.1, VBR.2, VBR.3, CBR.1, UBR.1, and UBR.2 are ATM Forum standards for traffic policing. The columns in Table 9-5 indicate the actions involved with each policing type. For descriptions of the *traffic types*, *connection types*, and *traffic policing*, refer to the *Cisco BPX 8600 Series Reference* and the *Cisco WAN Switching System Overview*. The preceding flow diagrams help clarify the information in the forthcoming tables. The remaining parts of this description contain attributes and screen examples.

Note If the description states the parameter is transmit/receive, the system is prompting for two values: one is for the transmit direction, the other for the receive direction. Also, not all parameters apply to OC3/STM1 or OC12/STM4, as the text shows.

Table 9-3 addcon-Parameters

Parameter/Prompt	Description
local channel	Specifies the local slot, port, virtual path identifier (vpi), and virtual connection identifier (vci) for the connection. The format is <i>slot.port.vpi.vci</i> . The vpi range for a UNI connection is 0–255. The vpi range for an NNI connection is 0–1023 The range for a vci is 1–4095. The vci can be an asterisk (*) to indicate the connection is a <i>virtual path connection</i> (so the vci has no meaning within the network).
remote node name	Specifies the name of the node at the other (or remote) end of the connection.
remote channel	Specifies the remote node’s slot, port, vpi, and vci for this connection. The format is <i>slot.port.vpi.vci</i> . The vpi and vci ranges are: The vpi range for a UNI connection is 0–255. The vpi range for an NNI connection is 0–1023 The range for a vci is 1–4095. The vci can be an asterisk (*) to indicate the connection is a <i>virtual path</i> (the vci does not provide a distinction within the network).
connection class	Specifies one of the following connection types: VBR, UBR, CBR, ATFST, ATFR, ATFX, ATFT, ABRSTD, or ABRFST. The subsequent displayed parameters depend on the connection type you choose. To see the parameters associated with each connection type, refer to the appropriate flow diagrams (Figure 9-1 through Figure 9-7). For a definition of each class, refer to the <i>Cisco WAN Switching System Overview</i> . The option for choosing a class <i>number</i> is also available. The class is a <i>template</i> for a connection type. The class serves as an alternative to specifying each parameter for a connection type. To specify a connection class, enter a digit in the range 1–10. To see the parameter values for a class, use the dspcls commands. To customize any class template, use cnfcls .
PCR	Peak Cell Rate: the cell rate that the source cannot exceed.
%Util	Specifies the percentage of bandwidth utilization.
MCR	Minimum Cell Rate: the committed, minimum cell rate for a connection in a network.
CDVT	Cell Delay Variation Tolerance: controls time scale over which the PCR is policed.
FBTC (AAL5 Frame Base Traffic Control)	Enables the possibility of discarding a whole frame rather than a single, non-compliant cell. FBTC used to set the Early Packet Discard bit at every node along a connection.
VSVD	Virtual Source Virtual Destination.

Parameter/Prompt	Description
Flow Control External Segments	Enables Cisco WAN switches to perform flow control on external segments (on the CPE, for example) in addition to the Cisco WAN Switching segments.
SCR	Sustainable Cell Rate: the long-term limit on the rate that a connection can sustain.
MBS	Maximum Burst Size: the maximum number of cells that can burst at the PCR and still be compliant. MBS is used to determine the Burst Tolerance (BT), which controls the time period over which the SCR is policed.
Policing	(see Table 9-5, "Traffic Policing Definitions").
VC QDepth	The depth of the queue VC QDepth.
CLP Hi	Cell Loss Priority Hi threshold (% of VC QDepth). When the high threshold is exceeded, the node discards cells with CLP=1 until the number of cells in the queue drops below the level specified by CLP Lo/EPD.
CLP Lo/EPD	Cell Loss Priority Low threshold (% of VC QDepth)/Early Packet Discard. When the number of cells in the queue drops below the level specified by CLP Lo/EPD, the node stops discarding cells with CLP=1. If the card is a BXM and AAL5 FBTC=yes, the percent of VC QMax equals the value of EPD. Frame-based Traffic Control (FBTC) is FGCR for AAL5. For an ASI card, the percent of VC QMax is CLP Lo regardless of the FBTC setting.
EFCI	Explicit Forward Congestion Indication threshold (% of VC QDepth).
ICR	Initial Cell Rate: the rate at which a source initially transmits after an idle period.
IBR	Initial Burst Size: the maximum burst size a source can initially transmit after an idle period. IBR applies to only BXM cards.
ADTF (ATM Forum TM 4.0 term)	The Allowed-Cell-Rate Decrease Factor. Time permitted between sending RM-cells before the rate is decreased to ICR. (In previous software releases, ADTF was ICR TO—Initial Cell Rate Time Out.)
Trm (ATM Forum TM 4.0 term)	An upper bound on the time between forward RM-cells for an active source: an RM cell must be sent at least every <i>Trm</i> milliseconds. (In previous software releases, Trm was Min. Adjust.)
RIF (ATM Forum TM 4.0 term)	Rate Increase Factor: controls the amount by which the cell transmission rate may increase upon receipt of an RM cell. (In previous software releases, RIF was Rate Up.)
RDF (ATM Forum TM 4.0 term)	Rate Decrease Factor: controls the amount decrease in cell transmission rate when an RM cell arrives. (In previous software releases, RDF was Rate Down.)
Nrm (ATM Forum TM 4.0 term)	Nrm. Maximum number of cells a source may send for each forward RM cell: an RM cell must be sent for every <i>Nrm</i> -1 data cells.
FRTT (ATM Forum TM 4.0 term)	Fixed Round Trip Time: the sum of the fixed and propagation delays from the source to a destination and back.
TBE (ATM Forum TM 4.0 term)	Transient Buffer Exposure The negotiated number of cells that the network would like to limit the source to sending during start-up periods, before the first RM-cell returns.
PCR	Peak cell rate: the cell rate which the source may never exceed.

Table 9-4 addcon–Parameter Defaults and Ranges

PARAMETER WITH [DEFAULT SETTINGS]	UXM and BXM T1/E1, T3/E3, OC3, and OC12 RANGE	ASI RANGE
PCR(0+1)[50/50]	50–max. T1/E1 cells/sec. 50–max. T3/E3 cells/sec. 50–max. OC3 cells/sec 50–max. OC12 cells/sec	T3: MCR–96000 E3: MCR–80000 OC3 (STM1): 0–353200 Limited to MCR–5333 cells/sec for ATFR connections.
% Util [100/100] for UBR [1/1]	0–100%	1–100%
MCR [50/50]	cells/sec 6–max. of T3/E3/OC3/OC12	T3: 0–96000 cells/sec E3: 0–80000 cells/sec
AAL5 Frame Base Traffic Control: for VBR [disable] for ABR/UBR [enable] for Path connection [disable]	enable/disable	enable/disable
CDVT(0+1): for CBR [10000/10000], others [250000/250000]	0–5,000,000 microseconds.	T3/E3 1–250,000 usecs. OC3/STM1: 0–10000 usecs.
ForeSight [disable]	0 = disable 1 = enable	0 = disable 1 = enable
VSVD [disable]	enable/disable	enable/disable
Flow Control External Segment [disable]	enable/disable	enable/disable
Default Extended Parameters [enable]	enable/disable	enable/disable
CLP Setting [enable]	enable/disable	enable/disable
SCR [50/50]	c50–max. T1/E1 cells/sec. 50–max. T3/E3 cells/sec. 50–max. OC3 cells/sec 50–max. OC12 cells/sec	T3: MCR–96000:T3 E3: MCR–80000: E3 OC3/STM1: 0–353200 Limited to MCR–5333 cells/sec for ATFR connections.
MBS [1000/1000]	1-5,000,000 cells	T3/E3: 1–24000 cells OC3 (STM1): 10–1000 cells
Policing [3] For CBR: [4]	1 = VBR.1 2 = VBR.2 3 = VBR.3 4 = PCR policing only 5 = off	1 = VBR.1 2 = VBR.2 3 = VBR.3 4 = PCR policing only 5 = off
ICR: max [MCR, PCR/10]	MCR - PCR cells/sec	MCR - PCR cells/sec
ADTF [1000]	62–8000 msecs.	1000–255000 msecs.

PARAMETER WITH [DEFAULT SETTINGS]	UXM and BXM T1/E1, T3/E3, OC3, and OC12 RANGE	ASI RANGE
Trm [100]	ABRSTD: 1–100 msec. ABRFST: 3–255 msec.	20–250 msec.
VC QDepth [16000/16000] For ATFR/ATFST [1366/1366]	0–61440 cells	Applies to T3/E3 only ABR: 1–64000 cells ATFR: 1–1366 cells
CLP Hi [80/80]	1–100%	1–100%
CLP Lo/EPD [35/35]	1–100%	1–100%
EFCI [30/30] For ATFR/ATFST [100/100]	1–100%	1–100%
RIF: For ForeSight: = max [PCR/128, 10]	If ForeSight, then in absolute (0–PCR) If ABR, then 2 ⁿ (1–32768)	If ForeSight, then in absolute (0–PCR) If ABR, then 2 ⁿ (1–32768)
For ABRSTD [128]		
RDF: For ForeSight [93]	IF ForeSight, then % (0%–100%)	IF ForeSight, then % (0%–100%)
For ABRSTD [16]	If ABR, then 2 ⁿ (1–32768)	If ABR, then 2 ⁿ (1–32768)
Nrm[32]–BXM only	2–256 cells	not applicable
FRTT[0]–BXM only	0–16700 msec	not applicable
TBE[1,048,320]–BXM only	0–1,048,320 cells (different maximum range from TM spec. but limited by firmware for CRM (4095 only) where CRM=TBE/Nrm	not applicable
IBS [0/0]	0–24000 cells	T3/E3 ABR: 0–24000 cells ATFR: 1–107 cells OC3: 0–999 cells
Trunk Cell Routing Restriction (y/n) [y]	yes or no	yes or no

Table 9-5 Traffic Policing Definitions

Connection Type	ATM Forum TM spec. 4.0 conformance definition	PCR Flow (1st leaky bucket)	CLP tagging (for PCR flow)	SCR Flow (2nd leaky bucket)	CLP tagging (for SCR flow)
CBR	CBR.1 when policing set to 4 (PCR Policing only)	CLP(0+1)	no	off	n/a
CBR	When policing = 5 (off)	off	n/a	off	n/a
UBR	UBR.1 when CLP setting = no	CLP(0+1)	no	off	n/a
UBR	UBR.2 when CLP setting = yes	CLP(0+1)	no	CLP(0)	yes
VBR, ATFR, ATFST, ABRSTD with VSVD, and ABRFST	VBR.1 when policing = 1	CLP(0+1)	no	CLP(0+1)	no
VBR, ATFR, ATFST, ABRSTD with VSVD, and ABRFST	VBR.2 when policing = 2	CLP(0+1)	no	CLP(0)	no
VBR, ATFR, ATFST, ABRSTD with VSVD, and ABRFST	VBR.3 when policing = 3	CLP(0+1)	no	CLP(0)	yes
VBR, ATFR, ATFST, ABRFST	(when Policing = 4)	CLP(0+1)	no	off	n/a
VBR, ATFR, ATFST, and ABRSTD with VSVD	(when Policing = off)	off	n/a	off	n/a

Full Name

Add a connection

addcon parameters (see preceding flow diagrams and tables)

Related Commands

delcon, dspcons

Attributes

Privilege 1–2

Jobs Yes


```

Log           Yes
Node          IGX, BPX
Lock          Yes

```

Example 1

```
addcon 9.1.100.100 pubsbpx2 9.1.102.102
```

Description

Add a standard ABR connection with VSVD and no Default Extended Parameters (which then require user input for SCR, MBS, and so on).

System Response

```

pubsbpx1      TN      SuperUser      BPX 15      9.19.1 Oct. 27 1997 05:22 GMT

From          Remote      Remote
9.1.100.100  NodeName   Channel
9.1.100.100  pubsbpx2   9.1.102.102   State  Type
9.1.102.102  pubsbpx2   9.1.100.100   Ok     abrstd

```

```

This Command: addcon 9.1.100.100 pubsbpx2 9.1.102.102 abr * * * * e * d * * 1
* * * * *

```

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

clrchstats

Clears the gathered statistics for either a specific channel or all channels. When you enter a specific channel number, a display of the current channel statistics appears. The display asks if you confirm the choice for clearing. If you enter "*" (all channels) for the channel specification, the display prompts you to confirm the decision to clear all channel statistics.

Full Name

Clear channel statistics

Syntax

clrchstats <channel | *>

Related Commands

dspchstats

Attributes

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

Example 1

```
clrchstats 3.1.1
```

Description

Clear channel statistics for 3.1.1.

System Response

```

sw83          TN      SuperUser      IPX 16      9.1      Aug. 23 1997 19:24 PST

Channel Statistics: 3.1.1      Cleared: Aug. 17 1997 08:10
MIR: 3.8 kbps      Collection Time: 6 day(s) 10:04:58      Corrupted: NO
      Frames  Avg Size Avg  Util      Packets  Avg
      (bytes) (fps) (%)      (pps)
From Port:      1516586      198      2 35
To Network:     1516215      198      2 35      16678365      30
Discarded:      371      198      0 0
From Network:   1518665      197      2 35      16705146      30
To Port:       1518629      198      2 35
Discarded:      36      120      0 0
      ECN Stats: Avg Rx VC Q:      0      ForeSight RTD      40
    
```

```

Min-Pk bytes rcvd:      52470  FECN Frames:           0  FECN Ratio (%)   0
Minutes Congested:      0      BECN Frames:          16  BECN Ratio (%)   0
Frames rcvd in excess of CIR: 0  Bytes rcvd in excess of CIR: 0
Frames xmtd in excess of CIR: 0  Bytes xmtd in excess of CIR: 0
  
```

This Command: clrchstats 3.1.1

OK to clear (y/n)?

Table 9-6 **clrchstats-Parameters**

Parameter	Description
channel	Specifies the channel whose statistics are cleared.
*	Specifies all channel statistics.

cnfabrparm

Configures ABR parameters for a BXM or UXM.

Full Name

Configure ABR parameters

Syntax

cnfcls <slot> <parameters>]

Related Commands

addcon

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	BPX, IGX
Lock	Yes

Example 1

```
cnfabrparm 2
```

Description

Configure ABR parameters for the BXM in slot 2.

System Response

```
sw60          TN    SuperUser      BPX 15      9.1 Date/Time Not Set
```

```
ABR Configuration for BXM in slot 2
```

```
CI Control          : Y
```

```
Egress ER Stamping : N
```

```
Last Command: cnfabrparm 2 Y N
```

```
Next Command:
```

Table 9-7 **cnfabrparm-Parameters**

Parameter	Description
slot	Specifies the card.
CI Control	
Egress ER stamping	

cnfatmcls

The **cnfatmcls** command allows the ten Cisco-supplied class templates for ATM connection configuration to be modified. (The **addcon** command can take a class as an input).

When you enter the number of the class to configure, the display shows the current value of each parameter in the class. For each item in the class, a prompt appears for changing or keeping the current value.

Full Name

Configure class

Syntax

cnfatmcls <class number> [*optional parameters*]

Related Commands

addcon, dspatmcls, cnfcls, dspcls

Attributes

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

Example 1

```
cnfatmcls 10
```

Description

Configure ATM connection class 10. The command line interface (CLI) displays the current settings and requests the class type (see System Response 1). After you enter a class type, the CLI prompts you to specify each parameter for the selected class type (ABRSTD as System Response 2 shows).

System Response 1

```

sw60          TN      SuperUser      BPX 15      9.1 Date/Time Not Set

                ATM Connection Classes
Class: 10
  PCR(0+1)    % Util      CDVT(0+1)    Policing      Type: CBR
  4000/4000   100/100     10000/10000  4
Description: "Default CBR 4000"

```

This Command: cnfatmcls 10

Enter class type (VBR, CBR, UBR, ABRSTD, ABRFST, ATFR):

System Response 2

```

sw60          TN      SuperUser      BPX 15      9.1 Date/Time Not Set

                ATM Connection Classes
Class: 10
  PCR(0+1)    % Util      MCR          CDVT(0+1)    AAL5 FBTC    Type: ABRSTD
  4000/4000   100/100   4000/4000    10000/10000  n
Description: "Default CBR 4000"

```

This Command: cnfatmcls 10 abrstd * * * * *

Do you want this change (y/n)?

Table 9-8 cnfatmcls–Parameters

Parameter	Description
class	Specifies the class to configure. The class numbers are 1–10.

Table 9-9 **cnfatmcls–Optional Parameters**

Parameter	Description
optional parameters	Individual parameters are specific to the type of connection (CBR, VBR, ABR, ATFR). Each is prompted one at a time. Refer to the dspcls command to see the parameters in each of the classes.

cnfcls

The **cnfcls** command allows the ten Cisco-supplied class templates for connection configuration to be modified. (The **addcon** command can take a class as an input).

When you enter the number of the class to configure, the display shows the current value of each parameter in the class. For each item in the class, a prompt appears for changing or keeping the current value.

Full Name

Configure class

Syntax

cnfcls <class number> [*optional parameters*]

Related Commands

addcon, **dspcls**

Attributes

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

Example 1

```
cnfcls 10
```

Description

Configure connection class 10. The command line interface (CLI) displays the current settings and requests the class type (see System Response 1). After you enter a class type, the CLI prompts you to specify each parameter for the selected class type (ABRSTD as System Response 2 shows).

System Response 1

```

sw60          TN      SuperUser      BPX 15      9.1 Date/Time Not Set

                ATM Connection Classes
Class: 10
  PCR(0+1)    % Util    CDVT(0+1)    Policing    Type: CBR
  4000/4000   100/100   10000/10000  4
Description: "Default CBR 4000"
    
```

This Command: cnfcls 10

Enter class type (VBR, CBR, UBR, ABRSTD, ABRFST, ATFR):

System Response 2

```

sw60          TN      SuperUser      BPX 15      9.1 Date/Time Not Set

                ATM Connection Classes
Class: 10
  PCR(0+1)    % Util    MCR          CDVT(0+1)    AAL5 FBTC    Type: ABRSTD
  4000/4000   100/100   4000/4000   10000/10000  n
Description: "Default CBR 4000"
    
```

This Command: cnfcls 10 abrstd * * * * *

Do you want this change (y/n)?

Table 9-10 **cnfcls-Parameters**

Parameter	Description
class	Specifies the class to configure. The class numbers are 1-10.

Table 9-11 **cnfcls–Optional Parameters**

Parameter	Description
optional parameters	Individual parameters are specific to the type of connection (CBR, VBR, ABR, ATFR). Each is prompted one at a time. Refer to the dspls command to see the parameters in each of the classes.

cnfcon

Configures the ATM bandwidth parameters for a specified connection. The initial cell rate (ICR) normally is set to the port speed. It may be lower if other constraints exist on the data generation rate. If ICR is too low, cells are dropped. If it is too high, bandwidth may be wasted unless ForeSight is used. Statistical reports are the best source of information for deciding what to adjust.

If the connection type includes ForeSight (abr enabled), the results of the last test round trip delay command (**tstdelay**) appear. Note that this is not the current RTD but the result of the last test that ran. Connection priority — high or low — is displayed for standard frame relay connections and ForeSight connections. Several checks are done on the parameters that specify bandwidth to assist users in efficient use of network bandwidth. The following messages describe the performance evaluation.

- Error Min cannot exceed peak.
- Warning Min exceeds this port's speed.
- Warning Sum of mins exceeds port's speed.
- Warning Peak exceeds this port's speed.

Warning messages are informational only, so the related operation continues. If an error message appears, the operation does not continue.

Full Name

Configure connection

Syntax

cnfcon <slot.port.vpi.vci> [bandwidth parameters]

Related Commands

addcon, **dspcon**

Attributes

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

Example 1

```
cnfcon 12.1.1.6
```

Description

Configure ASI port 12.1.1.6. Parameter prompts appear.

System Response

```

a20          LAN   SuperUser      BPX 15   9.1   Aug. 29 1997 11:43 PST

Conn: 12.1.1.6          ca19          4.1.1.6          ABR
Description:

      SCR          IBS          MBS          ABR          MCR          PCR          ICR
      100/100      10/10      10/10      y          10/10      96000/96000      10/10

ICR TO  Rate Up  Rate Dn  Rate FastDn  Max Adjust  VC Qdepth  EFCI  % Util
   10     100    100     100          100          64000/64000  100/100  100/100

CLP  CLP Hi  CLP Lo
  y   100/100  90/90

```

This Command: `cnfcon 12.1.1.6`

MBS (10) must exceed IBS (10)
Enter the MBS [10/10]:

Table 9-12 **cnfcon-Parameters**

Parameter	Description
channel	Specifies the connection to configure. This command configures one connection at a time. The channel specification has the following format: slot.port.vpi.vci

Table 9-13 **cnfcon-Optional Parameters**

Parameter	Description
bandwidth parameters	Refer to the addcon command in this chapter for descriptions and connection types.

cnfport

Configures the parameters of an ATM port on ASI or BXM card on the BPX or a UXM card on the IGX.. Press Return to keep the current value of a parameter. See the parameter table for important information.

Full Name

Configure port

Syntax

cnfport <port> [<params>]

Related Commands

upport, dnport, dspport, dspports

Attributes

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

Example 1

```
cnfport 12.1 N N N H N N
```

Description

Configure port 12.1 to have an UNI cell header format; not to be an MGX 8220 shelf; not to have a Metro Cell Header format; shift on HCF; use no protocol; and not to apply %util.

System Response

```

batman          TN      SuperUser      BPX 15      9.1      Date/Time Not Set

Port:          12.1
Interface:     T3-2
Type:          UNI          %Util Use:      Disabled
Speed:         96000
Shift:         SHIFT ON HCF (Normal Operation)
VBR Queue Depth: 1000

Protocol:      NONE

```

Last Command: cnfport 12.1 N N N H N N

Next Command:

Table 9-14 cnfport-Parameters

Parameter	Description
slot.port	Specifies the ASI, BXM, or UXM card slot and port number.
nni/uni	Specifies whether the cell header format is NNI or UNI. UNI is the default.
axis	Specifies MGX 8220 queue depth for each slot.
metro data cell header	Specifies whether the metro data cell header type is used.
shift h n	Specifies whether a one-byte shift on the HCF field of the cell header occurs. The choice of H (shift) or N (no shift) depends on whether the ATM cloud includes non-Cisco WAN Switching nodes and whether virtual trunking is in operation: Select H (the default) if the cloud includes non-Cisco WAN Switching nodes or if only a physical trunk is configured for the ASI port. Select N if virtual trunks are configured <i>and</i> the ATM cloud consists of Cisco WAN Switching nodes only.
protocol	Specifies the use of either an LMI protocol, an ILMI protocol, or no specified protocol. No specified protocol is the default.

Parameter	Description
%util	<p>Enables/disables percent utilization. This parameter supports ATM VBR/ABR fairness for ASI terminated connections and applies to only VBR and ABR connections. To change the %util status of a port, no connections can be currently terminating on the port. Therefore, if connections terminate on the port, they must be deleted before cnfport execution then re-added after execution of cnfport.</p> <p>When this feature is disabled, the port queue bandwidth is calculated using the sum of the MCRs or PCRs for the connections terminating on the port. This is identical to the port queue bandwidth calculation prior to the implementation of the %util feature.</p> <p>The port queue bandwidth with %util feature <i>disabled</i> is:</p> <ul style="list-style-type: none"> • For ABR connections Port Queue BW = sum (MCR) • For VBR connections Port Queue BW = sum (PCR) • For CBR connections Port Queue BW = sum (PCR) <p>When the %util feature is enabled, the port queue bandwidth is calculated for ABR and VBR connections as follows: for ABR connections, the port queue bandwidth is the sum of a percentage of the MCRs for the connections terminating on the port; for VBR connections, the port queue bandwidth is the sum of a percentage of the PCRs for connections terminating on the port. The feature is not applied to CBR connections.</p> <p>In summary, the port queue bandwidth with feature %util <i>enabled</i> is:</p> <ul style="list-style-type: none"> • For ABR connections Port Queue BW = sum (MCR * %util) • For VBR connections Port Queue BW = sum (PCR * %util) • For CBR connections Port Queue BW = sum (PCR)

cnfportq

Configures queue parameters for a port on an ASI or BXM card on the BPX or a UXM card on the IGX. Pressing the Return key keeps the current value for the parameter.

Full Name

Configure port queue parameters

Syntax

cnfportq <port> [<params>]

Related Commands

upport, dnport, dspportq

Attributes

Privilege	2
Jobs	Yes
Log	Yes
Node	BPX, IGX
Lock	Yes

Example 1

```
cnfportq 4.2 200 80 60 80 1000 80 60 80 9800 80 60 80
```

Description

Configure port 4.2 to the parameters indicated.

System Response

```

ca19          VT   SuperUser      BPX 15    9.1    Aug. 23 1997 19:11 GMT

Port:         4.2    [INACTIVE]
Interface:    T3-2
Type:         UNI
Speed:        96000 (cps)

CBR Queue Depth:          200
CBR Queue CLP High Threshold: 80%
CBR Queue CLP Low Threshold: 60%
CBR Queue EFCI Threshold: 80%
VBR Queue Depth:          1000   ABR Queue Depth:          9800
VBR Queue CLP High Threshold: 80%   ABR Queue CLP High Threshold: 80%
VBR Queue CLP Low Threshold: 60%   ABR Queue CLP Low Threshold: 60%
VBR Queue EFCI Threshold: 80%   ABR Queue EFCI Threshold: 80%
```

Last Command: `cnfport 4.2 N N N 200 80 60 80 1000 80 60 80 9800 80 60 80`

Next Command:

Table 9-15 cnfportq– ASI Parameters

Parameter	Description
slot.port	Specifies the ASI card slot and port number.
nni/uni	Specifies whether the cell header format is NNI or UNI. UNI is the default.
cbr queue parms	Specifies the CBR queue parameters of depth, cbr-hi, cbr-lo, and efci. The ranges are 0 to 24000 for depth and 0 to 100% for all others.
vbr queue parms	Specifies the VBR queue parameters of depth, vbr-hi, vbr-low, and efci. The ranges are 0 to 24000 for depth and 0 to 100% for all others.
abr queue parms	Specifies the ABR queue parameters of depth, abr-hi, abr-low, and efci. The ranges are 0 to 24000 for depth and 0 to 100% for all others.

Table 9-16 cnfportq– UXM Parameters

Parameter	Description
slot.port	Specifies the UXM card slot and port number.
nni/uni	Specifies whether the cell header format is NNI or UNI. UNI is the default.
cbr queue parms	Specifies the CBR queue parameters of depth, cbr-hi, cbr-lo, and efci. The ranges are 0 to 97250 for depth and 0 to 100% for all others.
vbr queue parms	Specifies the VBR queue parameters of depth, vbr-hi, vbr-low, and efci. The ranges are 0 to 97250 for depth and 0 to 100% for all others.
abr queue parms	Specifies the ABR queue parameters of depth, abr-hi, abr-low, and efci. The ranges are 0 to 97250 for depth and 0 to 100% for all others. UBR traffic shares this queue with the ABR traffic.

Note The total queue size of the UXM card is 97250 cells.

delcon

Removes connections from the network. The same command with differing syntax may be used to delete voice connections, data connections, frame relay connections, or ATM connections. The syntax in this section deletes an ATM connection. You can verify connection deletions by using the **dspscons** command.

Full Name

Delete connections

Syntax

delcon <channel(s)>

Related Commands

addcon, **dspscon**, **dspscons**

Attributes

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

Example 1

```
delcon 4.1.1.4
```

Description

Delete connection 4.1.1.4. The connections to delete are highlighted, and a prompt appears asking you to confirm the deletion. Respond with “y”, for yes, and connection 4.1.1.4 is deleted.

System Response

```
ca19          VT   SuperUser      BPX 15      9.1      Aug. 23 1997 20:36 GMT

Local         Remote      Remote
Channel       NodeName   Channel
4.1.1.4      ca20       12.1.1.4   Ok   CBR
4.1.1.5      ca20       12.1.1.5   Ok   VBR
4.1.1.6      ca20       12.1.1.6   Ok   ABR
4.1.1.7      ca20       12.1.1.7   Ok   VBR
4.2.1.1      ca20       12.2.1.1   Ok   CBR
4.2.1.2      ca20       12.2.1.2   Ok   VBR
4.2.1.3      ca20       12.2.1.3   Ok   ABR

State  Type      Route
Avoid COS O
```

Last Command: delcon 4.1.1.4

Delete connections? (y)

Next Command:

Table 9-17 delcon-Parameters

Parameter	Description
channel	Specifies the channel or set of channels for deleting connections. <channel> is specified in the following format: slot.port.vpi.vci

dnport

Deactivates (or “downs”) the specified ATM port. Before downing a port, you must remove all connections from the port.

Full Name

Down port

Syntax

dnport <port>

Related Commands

cnfport, dspport, upport

Attributes

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

Example 1

```
dnport 4.2
```

Description

Down port 4.2.

System Response

```
ca19          VT      SuperUser      BPX 15      9.1      Aug. 23 1997 19:49 GMT
```

```
ASI Port States  
Port  State  
4.1  ACTIVE  
4.2  INACTIVE
```

Last Command: dsports

Next Command: dnport 4.2

Table 9-18 dnport-Parameters

Parameter	Description
port	Specifies the slot number and port number in the format <i>slot.port</i> .

dspatmcls

Displays the current parameters for an ATM connection class template. The number of classes is ten. The parameters and the values for each varies with the type of connection (CBR, VBR, ABR, and ATFR).

Full Name

Display ATM connection class

Syntax

dspatmcls <class number>

Related Commands

addcon, cnfatmcls, dspcls, cnfcls, dspcon, dspcons

Attributes

Privilege	1–2
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	No

Example 1

```
dspatmcls 1
```

Description

Display the parameters for configuration class 1.

System Response

```

night          TN      SuperUser      BPX 15      9.1      July 28 1997 13:22 GMT

                ATM Connection Classes
Class: 1
Type: VBR

UPC      SCR      IBS      MBS      ABR      PCR      ABR PCR
y        500/500      10/10      1000/1000      -      500/500      -/-

ICR      ICR TO Rate Up Rate Dn Rate FastDn Max Adjust      CDVT[in cells]
-/-      -      -      -      -      -      -      64000/64000

EFCI      % Util FGCRA      MFS      CLP CLP Hi CLP Lo BCM
100/100  100/100  n/n      -/-      y 100/100 100/100  n/n

Description: "Default VBR 500"

Last Command: dspatmcls 1

Next Command:
    
```

Table 9-19 dspatmcls-Parameters

Parameter	Description
class number	Specifies the class whose current parameters you want to see. Values are 1-10.

dspchstats

Displays statistics for a channel. The system periodically updates the display until you press the Delete key. An optional parameter for **dspchstats** is an *interval* between screen updates.

Full Name

Display channel statistics

Syntax

dspchstats <channel> [interval]

Related Commands

clrchstats

Attributes

Privilege	5
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	No

Example 1

```
dspchstats 4.1.50.1
```

Description

Display the channel statistics for connection 4.1.50.1.

System Response

```

night          TN      SuperUser      BPX 15      9.1      July 17 1997 02:46 GMT

Channel Statistics for 4.1.50.1      Cleared: July 13 1997 02:53 (|)
MCR: 0 cps      Collection Time: 0 day(s) 18:10:22      Corrupted: NO
  Traffic      Cells      CLP      Avg CPS      %util      Discards:      Cells
From Port :      14710      0      0      0      VcQ > CLP:      0
To Network :      14710      ---      0      0      VcQ Full :      0
From Network:      14710      ---      0      0      Qbin Full:      0
To Port :      14710      14710      0      0      Qbin> CLP:      0
                                          Failed :      14710
                                          RsrcOVL :      0
OAM      Cells
VC Q :      0      Tx OAM :      29608      NonCompliant:      0
Rx EFCI :      0      Rx AIS :      14710
Tx EFCI :      0      Rx FERF:      0      ForeSight      Cells
                                          Rx BCM :      0      Adj Up :      0
                                          Tx BCM :      0      Adj Dn :      0
AAL-5 Frames:      0      Adj Fdn:      0

This Command: dspchstats 4.1.50.1

Hit DEL key to quit:
    
```

Example 2

dspchstats 13.1.100 10

Description

Display statistics for connection 13.1.100 with a 10-second interval between screen updates. The card in slot 13 is an ALM/A. Note that the statistics are divided into the following categories:

- From the Port (something coming into a port, typically from an external device/box)
- To the Network (something going out of the switch; typically trunks)
- Discarded (received from the attached device but not transmitted to the network)
- From the Network (received in; typically, into the trunk)
- To the Port (transmitted out of the port, to an external device or cloud)
- Discarded (received from the network but not transmitted to the attached device)

System Response

```

sw142          TN      SuperUser      IGX 16      9.1      July 31 1997 14:38 PDT

Channel Statistics: 13.1.100      Cleared: July 31 1997 11:50      (|)
MCR: 150 cps      Collection Time: 0 day(s) 00:00:00      Corrupted: NO
  Cells      Avg      Util
              (cps)      (%)
From Port:      0      0      0
To Network:      0      0      0
Discarded:      0      0      0
From Network:      0      0      0
    
```

```
To Port:          0          0          0
Discarded:       0          0          0
```

This Command: dspchstats 13.1.100

Hit DEL key to quit:

Example 2

dspchstats 9.2.1.100

Description

Display statistics for connection 9.2.1.100. The card in slot 9 is a UXM.

System Response

```
sw199          TN      SuperUser      IGX 16      9.0.s6      Aug. 28 1997 09:25 PDT
```

```
Channel Statistics: 9.2.1.100                               Snapshot
Collection Time: 0 day(s) 13:28:47                          Cldr: 08/27/97 19:47:24
Type                                                         Count
Cells Received from Port                                     0
Cells Transmitted to Network                               0
Cells Received from Network                                 0
Cells Transmitted to Port                                   0
EOF Cells Received from Port                               0
Cells Received with CLP=1                                  0
Cells Received with CLP=0                                  0
Non-Compliant Cells Received                               0
Average Rx VCq Depth in Cells                             0
Average Tx VCq Depth in Cells                             0
Cells Transmitted with EFCI=1                              0
Cells Transmitted with EFCI=0                              0
Ingress Vsvd Allowed Cell Rate                             0
Egress Vsvd Allowed Cell Rate                             0
OAM state (0:OK,1:FERF,2:AIS)                             0
Good Pdu's Received by the Sar                             0
Good Pdu's Transmitted by the Sar                         0
Rx pdu's discarded by the Sar                              0
Tx pdu's discarded by the Sar                              0
Invalid CRC32 pdu rx by the sar                           0
Invalid Length pdu rx by the sar                          0
Shrt-Lgth Fail detected by the sar                        0
Lng-Lgth Fail detected by the sar                         0
```

Last Command: dspchstats 9.2.1.100

Table 9-20 dspchstats-Parameters

Parameter	Description
channel	Specifies the channel for statistics display.

Table 9-21 dspchstats–Optional Parameters

Parameter	Description
interval	Specifies the interval between updates of the statistics display. The intervals are in seconds. If you specify an interval, you either can press Delete to terminate the command or wait until the command times out.

dspcls

Displays the current parameters for a connection class template. The number of classes is ten. The parameters and the values for each varies with the type of connection (CBR, VBR, ABR, and ATFR).

Full Name

Display connection class

Syntax

dspcls <class number>

Related Commands

addcon, cnfcls, dspcon, dspcons

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	No

Example 1

```
dspcls 1
```

Description

Display the parameters for configuration class 1.

System Response

```

night          TN      SuperUser      BPX 15      9.1      July 28 1997 13:22 GMT

                        ATM Connection Classes
Class: 1
Type: VBR

UPC      SCR      IBS      MBS      ABR      PCR      ABR PCR
y      500/500      10/10      1000/1000      -      500/500      -/-

      ICR      ICR TO Rate Up Rate Dn Rate FastDn Max Adjust      CDVT[in cells]
      -/-      -      -      -      -      -      -      64000/64000

      EFCI      % Util FGCRA      MFS      CLP CLP Hi CLP Lo BCM
100/100 100/100 n/n      -/-      y 100/100 100/100 n/n

      Description: "Default VBR 500"

Last Command: dspcls 1

Next Command:

```

Table 9-22 dspcls-Parameters

Parameter	Description
class number	Specifies the class whose current parameters you want to see. Values are 1-10.

dspcon

Displays connection information for a specified channel. The information displayed includes:

- The channel numbers for both the local and remote ends of the connection.
- The node names at both ends of the connection.
- The type or data rate of the connection.
- The routing restriction.
- Trunk cell routing restriction.
- The class of service (COS) of the connection.
- The connection route, listing the end nodes and any intermediate nodes.
- If cost-based Auto Route is configured, displays maximum and current costs for a connection route.
- The preferred route for the connection (if configured).
- The status of the cards associated with the connection.
- Any Y-cable conflicts.
- The compression status.
- The connection bandwidth parameter values.
- The connection/type descriptor (if configured).
- The circuit round trip delay (if ForeSight is enabled).

Any failures that affect the connection flash on the screen. For frame relay NNI ports, the NNI value indicates the A-bit value received across the NNI from the remote network. The status that may be displayed includes:

OK	Connection OK
FAILED	Connection failed
MISSING	VPI.VCI was deleted in other network at NNI. A previous status report indicated a valid VPI.VCI was present but an updated report did not.
UNUSED	Indicates the UNI port does not support reporting of NNI A-bit status

Full Name

Display connections

Syntax

dspcon <channel>

Related Commands

addcon, cnfcon, cnfpref, cnfrtcost

Attributes

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

Example 1

`dspcon 12.1.1.5`

Description

Display connection information for channel 12.1.1.5 (a VBR connection).

System Response

```
ca20          LAN   SuperUser      BPX 15   9.1      Aug. 29 1997 10:44 PST

Conn: 12.1.1.5      ca19      4.1.1.5      VBR   Status: Down
      SCR          MBS          PCR          ABR PCR      UPC FST CLP % util
      1000/1000     10/10       500/500      --/--      y  n  y 100/100
Owner: LOCAL Restriction: NONE COS: 0
Group: NONE TestRTD: 16705 msec
```

```
Path:   Downed by user
Pref:   Not Configured
```

```
ca20          ASI-T3      : OK          ca19      ASI-T3      : OK
          Line 12.1 : OK          Line 4.1   : OK
```

```
Last Command: dspcon 12.1.1.5
```

```
Next Command:
```

Example 2

`dspcon 12.1.1.4`

Description

Display connection information for channel 12.1.1.4 (CBR).

System Response

```

ca20          LAN   StrataCom      BPX 15    9.1      Aug. 29 1997 10:42 PST

Conn: 12.1.1.4      ca19      4.1.1.4      CBR   Status: Down
      PCR           CDVT           MCR           ABR PCR      UPC FST CLP  % util
      100/100       10/10       --/--       --/--       y  n  y  100/100
Owner: LOCAL Restriction: NONE COS: 0
Group: NONE TestRTD: 0 msec Trunk Cell Routing Restrict: Y Max Cost: 100 Route Cost: 36

Path:   Downed by user
Pref:   Not Configured

```

```

ca20          ASI-T3    : OK          ca19      ASI-T3    : OK
              Line 12.1 : OK          Line 4.1  : OK

```

Last Command: dspcon 12.1.1.4

Next Command:

Example 3

dspcon 12.1.1.100

Description

Display connection information for channel 12.1.1.100 (an ABR connection.)

System Response

```

ca20          LAN   SuperUser      BPX 15    9.1      Aug. 29 1997 10:31 PST

Conn: 12.1.1.100    ca20
      SCR           MBS           MCR           ABR PCR      UPC FST CLP  % util
      20000/20000    50/50       20000/20000  96000/96000  y  y  y  100/100
      ForeSight RTD: 0 msec

```

Path: Route information not applicable for local connections

```

ca20          ASI-T3    : OK          ca20      ASI-T3    : OK
              Line 12.1 : OK          Line 12.2 : OK

```

Last Command: dspcon 12.1.1.100

Next Command:

Example 3

dspcon 4.1.2.1

Description

Display connection information for channel 4.1.2.1 (an ATFST connection.)

System Response

```
sw53          TN      SuperUser      BPX 15      9.1      July 26 1997 13:40 GMT

Conn:  4.1.2.1      sw53      4.3.2.1      atfst      Status: OK
      SCR          MBS          MCR          ABR PCR      UPC FST CLP % util
      25/25      1000/1000      25/25      25/25      y  y  y  100/100
ForeSightRTD: 0 msec
```

Path: Route information not applicable for local connections

```
sw53          BNI-T3      : OK          sw53          BNI-T3      : OK
      Line  4.1      : OK          Line  4.3      : OK
      OAM Cell RX: Clear          NNI          : OK
      NNI          : OK
```

Last Command: dspcon 4.1.2.1

Next Command:

Table 9-23 dspcon-Parameters

Parameter	Description
channel	Specifies the channel for which to display connection details. The command displays connection information for one channel at a time. You cannot specify a set of channels. Channel is specified in the following format: slot.port.vpi.vci

dspconcnf

Displays the following information for a connection's configuration:

- The channel numbers for both the local and remote ends of the connection.
- The node names at both ends of the connection.
- The preferred route for the connection (if configured).
- The bandwidth parameter values for ATM connections.
- VC queue depth.
- The connection type (if configured).
- Other values (see example screen).

Full Name

Display connection configuration

Syntax

dspconcnf <channel>

Related Commands

addcon, dspcon, dspcons, delcon

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX
Lock	No

Example 1

```
dspconcnf 3.1.1.1
```

Description

Display the configuration for 3.1.1.1.

System Response

```

sw60          TN      SuperUser      BPX 15      9.1 Date/Time Not Set

Conn:  3.1.1.1          sw60          3.1.1.1          abrstd
Description:

      PCR(0+1)      % Util      MCR          CDVT(0+1)      AAL5 FBTC
96000/96000      100/100 96000/96000      10000/10000      n
    
```

Last Command: dsponcnf 3.1.1.1

Next Command:

Table 9-24 dsponcnf-Parameters

Parameter	Description
channel	Specifies the channel for which to display connection configuration. The command displays connection information for one channel at a time. You cannot specify a set of channels. Channel is specified in the following format: slot.port.vpi.vci

dspcons

Displays information about the connections on an IPX, IGX, or BPX node. (For information about **dspcons** for an MGX 8220 card, refer to the *MGX 8220 Command Reference*.)

Table 9-25 lists all possible information headings that appear in the display. The actual headings that appear depend on the choice of selected optional parameters—including no parameters. The screen examples reflect various optional parameters.

Note This description contains all parameters that are displayed even though some parameters are meaningless on a BPX.

Table 9-25 **Headings in Connection Display**

Fields	Description								
Local Channel	The connection's channel at this node.								
Remote Node Name	The name of the node at the other end of the connection.								
Remote Channel	The connection's channel at the remote node.								
State	The state of the connection(s) are as follows. <table border="0"> <tr> <td>State</td> <td>Parameter</td> </tr> <tr> <td>OK</td> <td>routed</td> </tr> <tr> <td>Down</td> <td>downed</td> </tr> <tr> <td>Failed</td> <td>unrouted, but trying</td> </tr> </table>	State	Parameter	OK	routed	Down	downed	Failed	unrouted, but trying
State	Parameter								
OK	routed								
Down	downed								
Failed	unrouted, but trying								
Type	The type of connection (vbr, cbr, abr, atfr, or atfst).								
Route Avoid	The type of lines to avoid when routing (satellite lines, terrestrial lines, lines with zero code suppression).								
COS	The Class Of Service.								
Owner	The end of the connection in control of re-routing.								

Full Name

Display connections

Syntax

dspcons [*start_channel*] [*nodename*] [-f] [-v] [-d] [-atfr] [-abit] [-fabit] [-fail] [-down]

where

- start_channel* is the starting channel to display.
- nodename* specifies that connections for only the named node appear in the display.
- f specifies that the display show frame relay connections only.
- v specifies that the display show only voice connections.
- d specifies that the display show only data connections (in Kbps).

- atfr specifies that the display show frame relay to ATM interworking connections (as well as atfr with ForeSight).
- abit specifies that the display show status of the A-bit.
- fabit specifies that the display show only connections with failed A-bits.
- down specifies that the display show only downed connections.

Note Some parameters may cause other parameters not to appear. Therefore, if you specify all parameters, some do not appear.

Related Commands

addcon, delcon

Attributes

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

Example 1

dspcons 4.1.1.4

Description

Displays all connections starting with 4.1.1.4.

System Response

```
ca19          VT   SuperUser      BPX 15    9.1    Aug. 23 1997 19:44 GMT

Local         Remote      Remote
Channel       NodeName   Channel    State  Type      Avoid COS O
4.1.1.4       ca20       12.1.1.4   Ok     CBR        0   R
4.1.1.5       ca20       12.1.1.5   Ok     VBR        0   R
4.1.1.6       ca20       12.1.1.6   Ok     ABR        0   R
4.1.1.7       ca20       12.1.1.7   Ok     VBR        0   R
```

Last Command: dspcons

Next Command:

Example 2

dspcons -abit

Description

Display the A-bit status for all connections starting with 1.1.3.66.

System Response

```
sw81          TN      SuperUser      BPX 15      9.1          Aug. 14 1997 10:32 PST

Local        Remote      Remote
Channel      NodeName    Channel      State        Local        Remote
A-bit        A-bit
1.1.3.66     sw81        1.1.3.66     Ok           OK           OK
1.1.3.67     sw81        1.1.3.67     Ok           OK           OK
1.1.3.68     sw81        1.1.3.68     Ok           OK           OK
1.1.3.69     sw81        1.1.3.69     Ok           OK           OK
1.1.3.70     sw81        1.1.3.70     Ok           OK           OK
1.1.3.71     sw81        1.1.3.71     Ok           OK           OK
1.1.3.72     sw81        1.1.3.72     Ok           OK           OK
1.1.3.73     sw81        1.1.3.73     Ok           OK           OK
1.1.3.74     sw81        1.1.3.74     Ok           OK           OK
1.1.3.75     sw81        1.1.3.75     Ok           OK           OK
1.1.3.76     sw81        1.1.3.76     Ok           OK           OK
1.1.3.77     sw81        1.1.3.77     Ok           OK           OK
1.1.3.78     sw81        1.1.3.78     Ok           OK           OK
```

This Command: dspcons -abit

Continue?

Table 9-26 dspcons—Optional Parameters

Parameter	Description
start channel	Specifies the beginning channel to display. The <i>start channel</i> format is: <i>slot.port.vpi.vci</i> If no starting channel is specified, the display begins with the first connected channel.
node name	Specifies that connections to a specific remote node are displayed.
-atfr	Frame relay to ATM interworking connections
-abit	A-bit status

dspcons

Parameter	Description
-fabit	Connections with A-bit errors
-fail	Failed connections
-down	Downed connections

dsplmistats

Displays LMI statistics for a specified channel.

Full Name

Display LMI/ILMI statistics

Syntax

```
dsplmistats <port> [clear]
```

Note On an access shelf, the **dsplmistats** command takes no arguments. On an IPX or IGX node, **dsplmistats** requires a trunk number. On a BPX node, **dsplmistats** requires the slot and port number.

Related Commands

none

Attributes

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

Example 1

```
dsplmistats 1.1
```

Description

Display LMI statistics for channel 1.1.1.1.

System Response

```

sw81          TN      SuperUser      BPX 15      9.1          Aug. 29 1997 14:44 PST

                Annex G LMI Statistics for slot:1 port:1
VPI.VCI:      0.0          Lmi enabled      Lmi polling enabled
Invalid Pdu   Rx:         0          Status Polling Timer (T396) : 10
Invalid Pdu Len Rx:      0          Status Enquiry Timer (T393) : 10
Unknown Pdu Type Rx:    0          Max Status Enquiry Retry (N394): 5
Unknown IE Type Rx:    0          Update Status Timer (T394) : 10
Bad Transaction Rx:    0          Max Update Status Retry (N395) : 5
Status       Rx:       77715        Spc Polling Timer : 3
Status Enq   Tx:       77711        Spc Retry Timer : 0
Status Enq   Rx:       77897        Spc Retry Counter : 1
Status       Tx:       77897        Node Status Retry Timer : 0
Status Ack   Rx:       1505         Node Status Retry Counter : 0
Update Status Tx:      1507         Node Status Polling Timer : 7
Update Status Rx:     2042
Status Ack   Tx:     2042

Last Command: dsplmistats 1.1

Next Command:
    
```

Table 9-27 dsplmistats-Parameters

Parameter	Description
port	Channel is specified in the format <i>slot.port</i> .

Table 9-28 dsplmistats-Optional Parameters

Parameter	Description
clear	On a BPX node only, the optional clear argument clears the current statistics after dsplmistats executes.

dspport

Displays detailed status on a single specified ATM port. The more specific the port address in the command, the more detail is provided. A full description of these parameters is provided in the **cnfport** command.

Full Name

Display port

Syntax

dspport <slot.port>

Related Commands

cnfport, upport, dnport

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	BPX, IGX
Lock	No

Example 1

```
dspport 4.1
```

Description

Display the status of ASI port 4.1.

System Response

```

swstorm      TN      SuperUser      BPX 15      9.1      July 26 1997 17:57 GMT

Port:        4.1      [ACTIVE ]
Interface:   T3-2
Type:        UNI
Speed:       96000 (cps)
VBR Queue Depth: 10800

Protocol:    NONE

```

Last Command: dspport 4.1

Next Command:

Table 9-29 dspport– Parameters

Parameter	Description
slot.port	Specifies the slot number and port to display.

dspportq

Displays the port queue configuration for an ASI or BXM card on a BPX or a UXM card on an IGX. After you enter this command with the required slot and port number parameter, the display shows the detailed port queue configuration information shown in the example figure.

Full Name

Display port queue configuration.

Syntax

dspportq <slot.port>

Related Commands

cnfportq

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	BPX, IGX
Lock	No

Example 1

dspportq 4.1

Description

Display the port queue configuration for 4.1.

System Response

```

swstorm          TN      SuperUser      BPX 15      9.1      July 26 1997 18:01 GMT

Port:            4.1      [ACTIVE ]
Interface:       T3-2
Type:            UNI
Speed:           96000 (cps)

CBR Queue Depth:                200
CBR Queue CLP High Threshold: 80%
CBR Queue CLP Low Threshold:  60%
CBR Queue EFCI Threshold:       80%
VBR Queue Depth:                10800
VBR Queue CLP High Threshold: 80%
VBR Queue CLP Low Threshold:  60%
ABR Queue Depth:                 0
ABR Queue CLP High Threshold: 80%
ABR Queue CLP Low Threshold:  60%
```

VBR Queue EFCI Threshold: 80% ABR Queue EFCI Threshold: 80%

Last Command: dspportq 4.1

Next Command:

Table 9-30 dspportq– Parameters

Parameter	Description
slot or slot.port	Specifies either the slot number or the slot and port number.

dspportstats

Displays a summary of port statistics for the ATM port specified. These include the cell count in the transmit and receive directions, and error counts associated with the port. The display indicates the date and time that the statistics were cleared and the statistics collection time since the last clearance. Cells transmitted indicates the amount of data transmitted out the port to the user device. Cells received indicates the amount of data received from the user device at the port. Corrupted statistics result from channel/port loopbacks or port tests. A yes in this field indicates that such loopback or port test have occurred since the statistics were last cleared.

Full Name

Display port statistics

Syntax

```
dspportstats <port> [interval]
```

Related Commands

clrportstats

Attributes

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

Example 1

```
dspportstats 4.1
```

Description

Display the statistics for ASI port 4.1.

System Response

```

ca19          VT   SuperUser      BPX 15    9.1    Aug. 23 1997 18:55 GMT

Port Statistics for 4.1          Cleared: Aug. 23 1997 18:19
Port Speed: 96000 cps    Collection Time: 0 day(s) 00:00:00    Corrupted: NO

          Cells          CLP          (EFCI)
Rx Port:  1274609      1032194          0
Tx Port:  1274607      1032192          0
          CellBuf Of1:          0

Unknown Addr:          0
Last Unknown Addr:
Tx Payload Err Cnt:    0
Tx Hdr Err discard:    0
Nonzero GFC Count:    0
    
```

This Command: dspportstats 4.1

Hit DEL key to quit:

Table 9-31 dspportstats-Parameters

Parameter	Description
slot.port	Specifies the ATM card set and port number.

Table 9-32 dspportstats-Optional Parameters

Parameter	Description
interval	Specifies the refresh interval time for data. It can be specified between 1 and 60 seconds. The default interval is 1 seconds.

dsprtcache

New in Release 9.1, this command displays the cache of all cost-based routing connections. The optional 'index' parameter lets you specify a cache entry index. The optional 'c' parameter clears the cache. The information displayed includes:

Full Name

Display cost-based route cache

Syntax

dsprtcache [index] [c]

[index] specifies the cache entry index

[c] specifies to clear the entire cache or a single entry

Related Commands

dspcon, cnfrtcost, cnfpref

Attributes

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

Example 1

```
dsprtcache
```

Description

Display route cache contents, and let you monitor and manually clear the cache.

System Response

```
pissaro TN StrataCom BPX 15 9.1 Jun. 18 1997 11:11 GMT
Route Cache (Summary)
  Index Use # Cost Delay Restrict Load VPC Hops RemoteNode
0 Yes 1 Yes No None VBR No 2 lautrec
1 Yes 6 Yes No *s BDB No 3 vangogh
2 Yes 9 Yes No None BDA No 3 matisse
3 Yes 3 Yes No *t BDB No 3 rousseau
4 Yes 1 Yes No None CBR No 3 seurat <- current
5 No 0 No No None --- No 0 ---
6 No 0 No No None --- No 0 ---
```

7	No	0	No	No	None	---	No	0	---
8	No	0	No	No	None	---	No	0	---
9	No	0	No	No	None	---	No	0	---
10	No	0	No	No	None	---	No	0	---
11	No	0	No	No	None	---	No	0	---

Last Command: dsprtcache

Next Command:

Table 9-33 dsprtcache-Parameters

Parameter	Description
index	Specifies a particular route entry within the cache. When used with the c parameter, the route is either displayed or cleared from the cache.
c	Clears the cache, or if you also enter the index parameter, clears the route cache specified by the index number.

upport

Activates a single port on an ASI or BXM card on a BPX or a UXM card on an IGX. If the port has not been configured, the default configuration values are used to configure the port.

Full Name

Up port

Syntax

upport <slot,port>

Related Commands

dnport, cnfport, upln

Attributes

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

Example 1

```
upport 4.2
```

Description

Activate port 2 on the ASI in slot 4.

System Response

```
ca19          VT      SuperUser      BPX 15      9.1      Aug. 23 1997 19:17 GMT

Port:         4.2      [ACTIVE ]
Interface:    T3-2
Type:         UNI
Speed:        96000 (cps)

CBR Queue Depth:          200
CBR Queue CLP High Threshold: 80%
CBR Queue CLP Low Threshold: 60%
CBR Queue EFCI Threshold: 80%
VBR Queue Depth:         1000
VBR Queue CLP High Threshold: 80%
VBR Queue CLP Low Threshold: 60%
VBR Queue EFCI Threshold: 80%
ABR Queue Depth:          9800
ABR Queue CLP High Threshold: 80%
ABR Queue CLP Low Threshold: 60%
ABR Queue EFCI Threshold: 80%
```

Last Command: upport 4.2

Next Command:

Table 9-34 upport-Parameters

Parameter	Description
slot.port	Specifies the slot number of the card and the port to activate.

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 **cnfchutl** 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 **dsprkutl** 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 the delay in seconds before the network reroutes a connection in the event of a trunk failure. The range is 0–15. By spreading out the COS numbers to vary the rerouting delay, one class of channels has a chance to reroute before the another 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

Table 10-1 shows the full command name and starting page for each description.

Table 10-1 Bandwidth Management Commands

Command	Description	Page
cnfchutl	Configure channel utilization	10-3
cnfcomb	Configure combined timeout parameters	10-7
cnfcos	Configure class of service	10-9
cnfpref	Configure preferences	10-11
cnftrcost	Configure cost based routing	10-14
dncon	Down connections	10-16
dspload	Display load	10-19
dspospace	Display open space for routes	10-23
dsprts	Display routes	10-25
dsprkutl	Display trunk utilization	10-29
prtrts	Print routes	10-32
upcon	Up connections	10-34

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 user-specified rate of the connection and modifies it by using the percent of utilization you specify with **cnfchutl**. The resulting rate is used in calculations for loading trunks. The load model uses these figures instead of calculated estimates 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 you use **cnfchutl** 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 you use **cnfchutl** 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.

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

cnfchutl 5.1 40

Description

Set utilization on data channel 5.1 at 40%.

System Response

```
alpha          TRM   YourID:1          IPX 16   9.1   Aug. 23 1997 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

cnfchutl 14.1 55

Description

Set utilization on voice channel 14.1 at 55%.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 16 1997 10:10 PST

Channels      %    Adaptive  Gain (dB)  Dial      OnHk      Cond
Util          Voice     In  Out      Type      Interface Type  A  B  C  D  Crit.
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

```
cnfchutl 8.1.100 60
```

Description

Set utilization on Frame Relay channel 8.1.100 at 60%.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 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 10-2 cnfchutl-Parameters

Parameter	Description
channel	<p>Specifies the channel for configuring utilization. The channel can be in voice, data, Frame Relay, or FastPAD voice or data. The format for <i>channel</i> depends on the technology, as follows:</p> <ul style="list-style-type: none">• Voice connection: <i>slot.channel</i>• Data connection: <i>slot.port</i>• Frame relay connection: <i>slot.port.DLCI</i>• Access device connection: <i>slot.port.device_ID</i>• FastPAD voice connection: <i>slot.port.subport</i>• FastPAD data connection: <i>slot.port.subslot.subport</i>
percent utilization	<p>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%.</p>

cnfcmb

Configures a time the node waits for a second packet to become available for placing in an ATM cell. You can use the **cnfcmb** command to control the time that the node waits for individual traffic types. When you enter a value for a parameter, switch software multiplies the value by 125 microseconds to derive the timeout.

Full Name

Configure combine timeout parameters

Syntax

```
cnfcmb <parameter number> <value>
```

Related Commands

dspchcnf

Attributes

Privilege	service
Jobs	Yes
Log	No
Node	IPX, IGX
Lock	Yes

Example 1

```
cnfcmb 1 1
```

Description

Change the timeout for voice packets from the default of 2 * 125 microseconds to 1 * 125 microseconds.

System Response

```
pubsigx1      TN      SuperUser      IGX 32      9.1      Sep. 17 1997 23:38 PDT
```

System-Wide Combine Timeout Parameters

```
1 Packet Combining Timeout for Voice (125 usec *)..... 2
2 Packet Combining Timeout for Time Stamped Traffic (125 usec *)..... 2
3 Packet Combining Timeout for High Priority Traffic (125 usec *)..... 0
4 Packet Combining Timeout for Non Time Stamped Traffic (125 usec *)... 2
5 Packet Combining Timeout for Bursty Data 1 Traffic (125 usec *)..... 255
6 Packet Combining Timeout for Bursty Data 2 Traffic (125 usec *)..... 255
```

This Command: cnfcmb

Which parameter do you wish to change: 1 1

Table 10-3 cnfcmb-Parameters

Parameter	Description	Default
1	Timeout for Voice (multiplied by 125 microseconds)	2
2	Timeout for Time Stamped Traffic (multiplied by 125 microseconds).	2
3	Timeout for High Priority Traffic (multiplied by 125 microseconds)	0
4	Timeout for Non Time Stamped Traffic (multiplied by 125 microseconds)	2
5	Timeout for Bursty Data 1 Traffic (multiplied by 125 microseconds)	255
6	Timeout for Bursty Data 2 Traffic (multiplied by 125 microseconds)	255

cnfcos

Determines the priority for rerouting a connection. You determine the priority by specifying a delay before the network reroutes one or more failed connections. The COS applies to:

- A single connection
- A range of connections
- A connection group

When connections have failed (typically due to a trunk failure), the network reroutes them according to priorities that are set primarily by the class of service (COS). The value of COS is the number of seconds the network waits before it begins to reroute the connection, so the COS determines the rerouting order for connections owned by a node. The range of possible COS values is 0–15.

The number of connections in a network has an effect on the increment between COS values you should use. For larger numbers of connections, you should allow more time to reroute the connections in a class. To facilitate the greater time required to reroute larger numbers of connections, use a larger increment between COS values. In a larger network, for example, you could specify COS values that are 3 seconds apart (such as 0, 3, 6, 9, 12, and so on, for example). For a network with less traffic, assign COS values in increments of 1 or 2. This strategy 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

```
cnfcos 5.1 0
```

Description

Set the COS for channel 5.1 to 0.

System Response

```

alpha          TRM   YourID:1      IPX 16    9.1    Aug. 16 1997 10:12 PST

Local   Remote   Remote
Channel NodeName Channel  State  Type    Compression  Code Avoid COS O
5.1     beta    25.1    Ok     256                    7/8      0  L
9.1.100 gamma   8.1.200 Ok     fr                                0  L
9.2.400 beta    19.2.302 Ok     fr                                0  L
14.1    gamma   15.1    Ok     v                                0  L
    
```

Last Command: cnfcos 5.1 0

Next Command:

Table 10-4 cnfcos-Parameters

Parameter	Description
channels	<p>Specifies the voice, data, Frame Relay, or Fast PAD voice/data channel(s), where <i>channel</i> is one of the following:</p> <ul style="list-style-type: none"> • Voice connections: <i>slot.channel</i> • Serial data connections: <i>slot.port</i> • Frame Relay connections: <i>slot.port.DLCI</i> • FastPAD switched voice connections: <i>slot.port</i> • FastPAD voice connections: <i>slot.port.subslot</i> • FastPAD data connections: <i>slot.port.subslot.subport</i>
cos	<p>Specifies the class of service number to assign to the channel, range of channels, or connection group. The range is 0–15 seconds, so the rerouting priority is inversely proportional to the COS (a low COS values means a high routing priority).</p>

cnfpref

Specifies the preferred route for a connection 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 exist between domains.

The 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 <channel(s) | *> <route> <+ | -> [d]
```

Related Commands

dsprts

Attributes

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

Example 1

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

Description

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    9.1    Aug. 16 1997 10:22 PST

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

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

Next Command:

Example 2

cnfpref 6.4 -

Description

Remove the preferred route for channel 6.4.

Example 3

cnfpref * +

Description

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    9.1    Aug. 23 1997 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 10-5 cnfpref–Parameters

Parameter	Description
channels	<p>Specifies the channel or range of channels for preferred route configuration. The channel specifier has one of the following formats</p> <ul style="list-style-type: none"> • Voice connection: <i>slot.channel</i> • Data connection: <i>slot.port</i> • Frame Relay connection: <i>slot.port.DLCI</i> • FastPAD voice connection: <i>slot.port.subport</i> • FastPAD data connection: <i>slot.port.subslot.subport</i> <p>A "*" 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 10-6 cnfpref–Optional Parameters

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

cnfrtcost

Configures the cost cap for a connection when cost-based routing is configured.

A maximum allowable cost value (cost cap) is used during route determination to prevent selection of a route which exceeds an acceptable cost. For routing based on delay, the cost cap is the acceptable end-to-end delay for the connection type. This cap is configured network-wide per delay-sensitive connection type.

For routing based on trunk cost, the cost cap is the acceptable end-to-end cost. This cap is configured per connection. The default cost cap is 100, which is derived from the maximum hops per route (10) and default cost per trunk (10). The cost cap can be changed at any time. If the cost cap is decreased below the current route cost, the connection is not automatically rerouted. A manual reroute is required to route the connection to fit under the new cost cap. This gives the user more control over the connection reroute outage.

Note **cnfrtcost** is only valid at the node where the connection was added.

Full Name

Display connection loading

Syntax

cnfrtcost <connection> <max cost>

<connection> indicates the connection endpoint (that is, slot.port.vpi.vci)

<max cost> indicates the maximum allowable route cost

Valid values = 1 - 100

Related Commands

dspcon, cnfpref, dsprtcache

Attributes

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

Example

cnfrtcost 9.2.5.100 40 1

After configuring the cost cap for a connection, you can check to see the configured value with the **dspon** command, as is shown in the System Response example. This is the **dspon** response for 9.2.5.100 with the additional fields of Max Cost (40) and Route Cost (1). For a route optimized on trunk delay, the cost labels are updated to indicate delay: Max Cost becomes Max Delay and Route Cost becomes Route Delay.

Description

Select route cost for channel 9.2.5.100.

System Response

```
sw203          TN      StrataCom      BPX 15      9.1.a4      Sep. 24 1997 18:18 GMT

Conn:  9.2.5.100      sw242      14.2.5.100      cbr      Status:OK
      PCR(0+1)      % util      CDVT(0+1)      Policing
      50/50      100/100      10000/10000      4/4
Owner: LOCAL Restriction: NONE COS: 0
TestRTD: 0 msec Trunk Cell Routing Restrict: Y Max Cost: 40 Route Cost: 1

Path:  sw203      3.1.1-- 2.1.1sw242
Pref:  Not Configured

sw203          ASI-T3      : OK          sw242      ASI-OC3      : OK
          Line 9.2 : OK          Line 14.2 : OK
          OAM Cell RX: Clear          NNI      : OK
          NNI      : OK

Last Command: dspon 9.2.5.100

Next Command:
```

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 one or more 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 signaling information between the end points is not visible to the IPX or IGX node. The **upcon** command reactivates the voice connections. The up/down status of the voice connections appears in the "State" column of the **dspscons** screen. Table 10-7 shows each item in the State column.

Table 10-7 Connection Status

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 connection

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

dncon 14.1 c

Description

Down connection 14.1 with courtesy.

Example 2

dncon 14.1 i

Description

Down connection 14.1 immediately.

Example 3

dncon cos 4–8 c

Description

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

dncon 3.1.100 i

Description

Immediately down connection 3.1.100.

System Response

```
pubsigx1      TN      SuperUser      IGX 32      9.1      Aug. 26 1997 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

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

Description

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

```
dncon cos 14.1.3
```

Description

Down FastPAD voice connection 14.1.3.

Example 7

```
dncon cos 14.1.1.5
```

Description

Down FastPAD data connection 14.1.1.5.

Table 10-8 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 10-9 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 and *to* the node at the other end of the trunk. In the screen display, the numbers of disabled trunks appear 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 changes due to the dynamic utilization of the trunks. Some types of connections, such as voice connections using adaptive voice and data connections using Data Frame Multiplexing (DFM), suppress packets. In contrast, 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** arguments include 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.

In Release 9.1, as shown in Example 3, the **dspload** screen will also display the configure Trunk Cost and the Trunk Qdelay when cost-based routing is configured.

Full Name

Display connection loading

Syntax

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

Related Commands

dsplnutl, **cnfcmparm**

Attributes

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

Lock No

Example 1

dspload

Description

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

System Response

```
alpha                    TRM    YourID:1                    IPX 16                    9.1                    Aug. 16 1997 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 2
dspload 10

Description

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

System Response

sw151 TN SuperUser IGX 16 9.1 Aug. 26 1997 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:

Example 3

dspload 1.1

Description

Display the load for trunk 1 in slot 1 of the current node, which includes the Trunk Cost because cost-based routing is configured. The trunk queue delay is also displayed if routing with delay is enabled.

System Response

```

sw203          TN      SuperUser      BPX 15      9.1          Sep. 24 1997 17:05 GMT

Configured Trunk Loading:  TRK  sw203 1.1-- 1.1 sw242

      Load Type      Xmt-c  Rcv-c      lcl
      NTS             0      0      Conid In Use      1068
      TS              0      0      Conid Available   703
      Voice           0      0      Total Capacity    1771
      BData A         0      0
      BData B         0      0      Trunk cost: 26
      CBR             23100  23100      Trunk V Qdelay:  2.5 msec
      VBR            14300  14300      Trunk NTS Qdelay: 31.9 msec
      ABR            18901  18901      Trunk is Terrestrial
      Total In Use    56301  56301      Trunk does not use ZCS
      Reserved        1000    1000      Trunk end doesn't support complex gateway
      Available       38699  38690      Traffic class:  V TS NTS FR FST CBR VBR ABR
      Total Capacity  96000  96000

Last Command: dspload 1.1

Next Command:
    
```

Table 10-10 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 node. 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

none

Attributes

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

Example 1

```
dspospace 4.1.1
```

Description

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

System Response

```
sw110          TN      SuperUser      IGX 16      9.1 Jan. 22 1997 19:11 GMT

Open Space for 4.1.1                               Snapshot

Domain
Local:  sw110      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 4.1.1

Next Command:

Table 10-11 dsospace-Parameters

Parameter	Description
connection	Specifies the connection.

dsprtcache

New in Release 9.1, this command displays the cache of all cost-based routing connections. The optional 'index' parameter lets you specify a cache entry index. The optional 'c' parameter clears the cache. The information displayed includes:

Full Name

Display cost-based route cache

Syntax

dsprtcache [index] [c]

[index] specifies the cache entry index

[c] specifies to clear the entire cache or a single entry

Related Commands

dspcon, cnfrtcost, cnfpref

Attributes

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

Example 1

```
dsprtcache
```

Description

Display route cache contents, and let you monitor and manually clear the cache.

System Response

```
pissaro TN StrataCom BPX 15 9.1 Jun. 18 1997 11:11 GMT
Route Cache (Summary)
Index Use # Cost Delay Restrict Load VPC Hops RemoteNode
0 Yes 1 Yes No None VBR No 2 lautrec
1 Yes 6 Yes No *s BDB No 3 vangogh
2 Yes 9 Yes No None BDA No 3 matisse
3 Yes 3 Yes No *t BDB No 3 rousseau
4 Yes 1 Yes No None CBR No 3 seurat <- current
5 No 0 No No None --- No 0 ---
6 No 0 No No None --- No 0 ---
```

7	No	0	No	No	None	---	No	0	---
8	No	0	No	No	None	---	No	0	---
9	No	0	No	No	None	---	No	0	---
10	No	0	No	No	None	---	No	0	---
11	No	0	No	No	None	---	No	0	---

Last Command: dsprtcache

Next Command:

Table 10-12 dsprtcache-Parameters

Parameter	Description
index	Specifies a particular route entry within the cache. When used with the c parameter, the route is either displayed or cleared from the cache.
c	Clears the cache, or if you also enter the index parameter, clears the route cache specified by the index number.

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.

In Release 9.1, **dsprts** also displays the current cost for all connection routes. A derouted connection shows no current cost. A connection route optimized with trunk delay shows the current total delay. A highlighted connection on the display has exceeded the maximum route cost.

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

```
dsprts
```

Description

Display the connection routes.

System Response

```

sw203          TN      SuperUser      BPX 15      9.1      Sep. 24 1997 17:47 GMT

Conn  Route
9.1.1.*          (Cost = 5)
          sw203      1.1-- 1.1sw242
Pref:  Not Configured
9.2.5.100        (Cost = 1)
          sw203      3.1.1-- 2.1.1sw242
Pref:  Not Configured
9.2.5.101        (Cost = 1)
          sw203      3.1.1-- 2.1.1sw242
Pref:  Not Configured
9.2.5.102        (Cost = 5)
          sw203      1.1-- 1.1sw242
Pref:  Not Configured
    
```

This Command: dsprts

Continue?

Table 10-13 dsprts—Optional Parameters

Parameter	Description
start group or channel	<p>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:</p> <p>Voice connection: <i>slot.channel</i></p> <p>Data connection: <i>slot.port</i></p> <p>Frame relay connection: <i>slot.port.DLCI</i></p> <p>Frame relay connection group: <i>remote node.groupname</i></p> <p>Access device connection: <i>slot.port.device_ID</i></p> <p>FastPAD voice connection: <i>slot.port.subport</i></p> <p>FastPAD data connection: <i>slot.port.subslot.subport</i></p>
node name	<p>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.</p>

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 10-14 Trunk Utilization Parameters and Statistics

Trunk Utilization Parameters and 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	The used bandwidth expressed as a percentage of the available bandwidth during the last interval. The derivation of interval utilization is as follows: $100 \times (\text{"Interval packets transmitted"} / (\text{"Last Interval"} \times \text{bandwidth (in packets per second)}))$.
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 10-15 Terminated Connection Statistics

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

dsprkutl 5.3

Description

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

System Response

```
bootzilla      TN      SuperUser      BPX 15  9.1      Aug. 27 1997 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: dsptrkutl 5.3
```

```
Hit DEL key to quit:
```

Table 10-16 dsptrkutl-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 10-17 dsptrkutl-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

```
prtrts
```

Description

Print connection routes.

System Response

None available as command produces hardcopy.

Table 10-18 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> <tbody> <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> </tbody> </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	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.												

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 **dspscons** 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, dspscons

Attributes

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

Example 1

```
upcon 5.1
```

Description

Activate connections 5.1.

System Response

```

alpha          TRM   YourID:1      IPX 16    9.1    Aug. 23 1997 11:33 PST

Local          Remote      Remote
Channel        NodeName    Channel     State  Type    Compression  Code Avoid COS O
5.1            beta        )25.1       Ok     256                    7/8      0  L
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

```
upcon 9.1-4
```

Activate a range of connections 9.1-4

Example 3

```
upcon alpha
```

Activate a Frame Relay group connection

Example 4

```
upcon 9
```

Activate all downed connections with a COS of 9

Example 5

```
upcon cos 9-12
```

Activate all downed connections with a COS of 9-12

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.

Synchronizing Network Clocks

This chapter describes how to synchronize a network and the commands related to synchronization.

Understanding Network Synchronization

Available clock sources are defined within the network as primary (p), secondary (s), or tertiary (t). This hierarchy is based on clock source stability. Each trunk that can pass clock synchronization is defined. Each network node's clock is based on the most stable clock source. If multiple, equal clock sources are available, each node chooses the closest one (measured in number of hops).

Clock sources can be changed by you or automatically by a node. If there are no primary, secondary, or tertiary clock sources defined or working in a network, then the internal oscillator of one node is automatically selected as the active network clock source.

Whenever a clock source changes—because of a line repair or an operator's command, for example—the node ensures that the clock path remains hierarchical. Also, whenever a subnetwork is merged with another subnetwork, each node in the new network verifies that it has the nearest, most stable clock that is available.

A continuous clock test compares the frequency of the node clock source to a reference on the control card. If it detects a clock source outside preset frequency limits, the controller declares the source defective and selects another source.

Defining Clocks and Lines

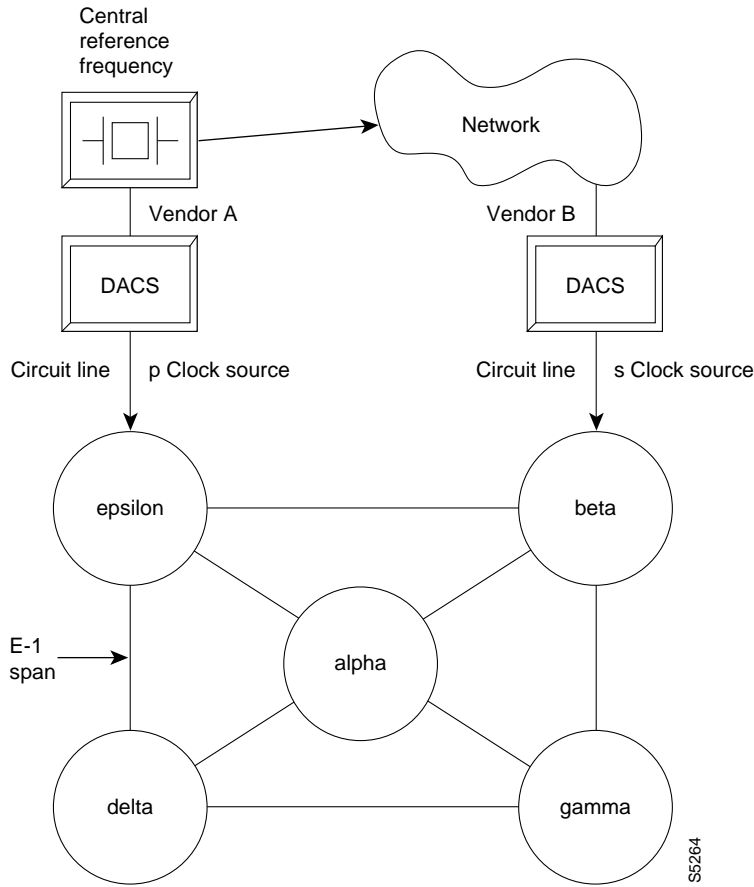
Ordinarily, a network's clock sources and line characteristics are configured as part of the node installation process. Thereafter, clock sources are redefined when a network is reconfigured or a line status is changed.

Clock sources are manually defined as primary, secondary, or tertiary. The definition depends on the stability of the clock source. Considerations for assessing and defining clock sources include:

- Stratum level of each clock source
- Reliability of each clock source (Figure 11-1 illustrates clock source reliability)
- Network configuration (topology, backbone, ring, star, mesh, and so on)
- Availability of multiple clock sources in a plesiochronous network

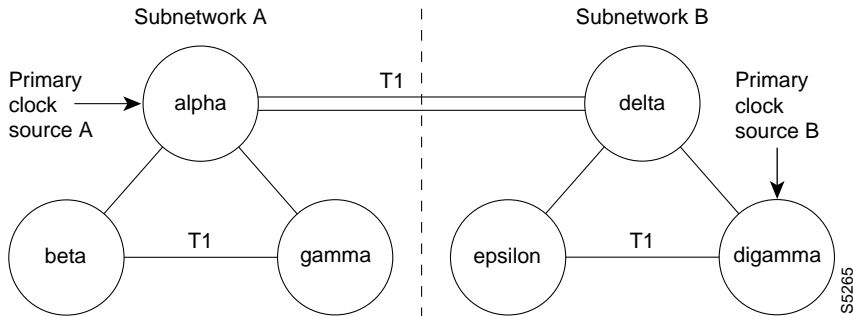
A plesiochronous network is a network in which there are two or more independent, active clock sources. For example, a network in which multiple vendors provide multiple lines that require clock mastership can be a plesiochronous network. The following depicts clock source reliability.

Figure 11-1 Clock Provided by Vendor



In this example of a network, vendor A provides the most reliable clock source.

Figure 11-2 Clock Source in Node



If the packet lines in the T1 span between nodes alpha and delta are defined to pass clock synchronization, then node delta could attempt to synchronize with primary clock source A as well as with primary clock source B, because the distance in hops (instead of miles or kilometers) is the same: one.

If the packet lines in the T1 span from node alpha to node delta are defined not to pass clock synchronization, then a plesiochronous network would result.

One trunk parameter is the ability to pass a clock. A line passes a clock if the clock information transmitted from one end arrives as the identical clock at the other end. Normal T1 or E1 lines pass clock. Lines that do not normally pass clock include:

- Satellite lines.
- Lines that pass through a DACS (Digital Access Cross-connect Switch).
- Subrate lines

A long-distance line that passes through another provider's network may or may not pass clock. The default ability for an IPX or IGX trunk is to pass clock. The following applies to clocks and lines:

- Defining a trunk as a *clock source* is incompatible with defining it as passing clock.
- In an IPX/IGX/BPX network, a *clock source* functions as a source for the entire network.
- A trunk should be defined as a clock source only if a DACS-type device connects to the trunk.

Synchronizing the Network

Network synchronization includes specification of primary, secondary, and tertiary clock sources. The latter two sources serve as backups in case of clock failures. The **cnfclksrc** command specifies the source of a clock and can remove a previously specified clock source. Multiple primary sources, multiple secondary sources, and multiple tertiary sources are allowed.

The designation of the clock source depends on the stratum (or stability) of the clock source. Each node in the network synchronizes to the nearest (fewest number of hops) primary clock source. If no primary source is available, the nearest secondary clock source is used, and so on. If no other source is available, the network synchronizes to the internal oscillator of one of the nodes in the network. The following commands manage the network clocks.

- **cnfclksrc** Specifies a primary, secondary, or tertiary clock source in a network.
- **dspclksrcs** Displays all the currently defined clock sources.
- **dspcurclk** Displays the current clock source that the network is currently using.
- **clrclkalm** Clears an alarm associated with a clock source. The cause of an alarm usually clock source that fails or is outside of the frequency limits. You must clear a clock alarm before the corresponding clock source is usable.

Summary of Commands

Table 11-1 shows the name and starting page for the description of synchronization commands.

Table 11-1 Commands for Clock Synchronization

Command	Description	Page
clrclkalm	Clear clock alarm	11-4
cnfclksrc	Configure clock source	11-6
dspclksrcs	Display clock source	11-8
dspcurclk	Display current clock	11-10

clrckalm

Clears the alarm status of a clock source after a problem is cleared. (The alarm can be a “Bad Clock Source” or “Bad Clock Path.”) Before the node can use the original clock source, you must clear the alarm with **clrckalm**. The system displays no messages after execution.

Full Name

Clear clock alarm

Syntax

clrckalm <line type> <line number>

Related Commands

cnfelksrc, dspcksrcs, dspclns, dspcurclk, dsptrks

Attributes

Privilege	1-5
Jobs	No
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
clrckalm c 12
```

Description

Clear a clock alarm on circuit line 12.

Example 2

```
clrckalm p 12
```

Description

Clear clock alarm on trunk 12.

Table 11-2 **circlkalm-Parameters**

Parameter	Description
c/p	Specifies the type of line. A "c" indicates a circuit line. A "p" indicates a trunk.
line number	Specifies the number of the circuit line or trunk.

cnfclksrc

Specifies a network-wide clock source. The clocking scheme ensures that all nodes in the network automatically synchronize to the nearest, most stable clock available. After you specify a clock source, the location and type of the network clock source goes out to all nodes in the network. This synchronization remains in effect despite line failures, power outages, controller card switchovers, line repairs, and the joining of subnetworks and all other network topology changes. Each node in the network maintains a list of the available clock sources for the network.

A clock *source* can be either circuit line (C), a trunk (P), or an external source (E). The clock *type* can be primary (P), secondary (S), or tertiary (T). To remove a clock source, enter its type as “r” at the end of the **cnfclksrc** command line.

Designation of the clock type depends on the stratum (or stability) of the clock source. In a large network, for example, you could designate all stratum 2 clocks as “primary,” all stratum 3 clocks as “secondary,” and all stratum 4 clocks as “tertiary.” The network regards all primary clocks as equal in the network clocking hierarchy, regards all secondary clocks as equal, and regards all tertiary clocks as equal. Each node synchronizes to the highest stratum clock source that is available. If multiple, equal clock sources are available, the node synchronizes to the source that is physically the closest. If none of the sources is available, the network synchronizes to the internal oscillator of one of the nodes in the network. When you are planning clock sources, consider the following:

- The **dspclksrcs** command displays all clock sources in a network. The **dspcurclk** command displays the clock source that a specific node is currently using and the path between the source and the local node.
- To avoid unnecessary clock disruptions, configure all primary clock sources for the network first.
- A line must be *upped* and not in an alarm before you can configure it as a network clock source.
- Before you define a trunk as a clock source, use **cnftrk** to specify that the trunk does not pass synchronization.

Full Name

Configure network clock source

Syntax

cnfclksrc <line type> <line number> <source type> [freq]

Related Commands

dspclksrcs, **dspcurclk**

Attributes

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

Example 1

```
cnfclksrc c 15 p
```

Description

Configure circuit line 15 as a primary clock. The network clock sources screen shows that circuit line 15 has been configured as a primary clock source for the network.

System Response

```
bootzilla      TRM   YourID:1          IPX 32    9.1     Aug. 15 1997 15:31 MST
```

Network Clock Sources

```
Primary
bootzilla CLN  15
```

```
Secondary
None
```

```
Tertiary
None
```

```
Last Command: cnfclksrc c 15 p
```

```
Next Command:
```

Table 11-3 cnfclksrc–Parameters

Parameter	Description
line type	Specifies whether the clock source is a trunk (p), circuit line (c), or external (e).
line number	For a network clock source of either a circuit (c) or trunk (p), this specifies the back slot location of the source. For external clock sources (e), enter either front card slot 1 or 2 as long as either slot has a card. This external source designation applies to IPX, IGX, and BPX nodes.
source type	Specifies where the clock fits in the hierarchy: p = primary; s = secondary; and t = tertiary. To remove the clock source configuration for the current type and line, enter an “r.”

Table 11-4 cnfclksrc–Optional Parameters

Parameter	Description
freq	Specifies the frequency of the clock source. An entry is necessary only if the <i>line type</i> is an external line. The supported frequencies are 1.544 MHz and 2.048 MHz. Enter a “1” for 1.544 MHz or a “2” for 2.048 MHz.

dspclksrcs

Displays all clock sources for the network. The display for unreachable or failed clock sources flashes on and off.

Full Name

Display network clock sources

Syntax

dspclksrcs

Related Commands

cnfelksrc, dspcureclk

Attributes

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

Example 1

```
dspclksrcs
```

Description

Display the network clock sources.

System Response

bootzilla TRM YourID: Numba 1 IPX 32 9.1 Aug. 15 1997 15:32 MST

Network Clock Sources

Primary
bootzilla CLN 15

Secondary
None

Tertiary
None

Last Command: dspclksrcs

Next Command:

dspcurclk

Displays the current clock source. The display for **dspcurclk** contains the following information:

- Source Node: The node in the network where the clock source originates.
- Source Line: the type of line used as the clock source and its back slot number (for example, "CLN 15", TRK 22, "EXTERNAL 2", or "INTERNAL").
- Clock Type: the clock type configured for the source clock (primary, secondary, or tertiary). If the source clock for the node is an internal oscillator, no clock type is given.
- Clock Frequency: the received clock frequency as measured by the local NPC/BCC.
- Path to Source: the path from the current node to the node of the originating clock source. This includes all intermediate nodes and trunks.

Full Name

Display current clock sources

Syntax

dspcurclk

Related Commands

cnfelksrc, **dsplksrcs**

Attributes

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

Example 1

```
dspcurclk
```

Description

Display the current clock source.

System Response

bootzilla TRM YourID:1 IPX 32 9.1 Aug. 15 1997 15:33 MST

Current Clock Source

Source Node: gamma
Source Line: Internal
Clock Type:
Clock Frequency: 1544015

Path to Source:
bootzilla 9--10gamma

Last Command: dspcurclk

Next Command:

Managing Jobs

A *job* is a user-specified string of commands. A job can automatically execute on a pre-arranged schedule or upon an event trigger. This chapter describes the commands that let you:

- Create a job
- Run a job
- Stop a job
- Display one or more jobs
- Edit a job
- Delete a job
- Create a job trigger

The system assigns a number to a new job. This *job number* identifies the job and is a required parameter for most job control commands. When you create a new job, the current privilege level is automatically saved as the privilege level of the job. Only commands that are available at your privilege level can be in your job specification. For example, a user whose highest privilege level is 3 cannot include the **addtrk** command in a job because **addtrk** requires a level 1 privilege. This privilege requirement also applies to other job functions, such as running, editing, or stopping a job.

Not all Cisco WAN Switching commands can execute as a part of a job. For this reason, the Attributes section of each command description in this manual states whether the command can function in a job.

Creating (Adding) a Job

Consider the following before creating a job:

- The **addjob** command creates a new job. When you use **addjob**, the system prompts for optional and required arguments. Unlike other commands, the **addjob** command begins with optional parameters. A job can run when you execute the **runjob** command or at a time and date you specify with **addjob**. Note that the system increments the job number, but you can assign a job description to indicate the function of the job. The following list describes the **addjob** parameters:
 - Description (optional): this can contain up to 16 characters and include spaces.
 - Execution time (optional): if you specify an execution time, the first (unprompted) parameter to enter is four digits indicating the year. The system subsequently prompts for the month, day, hour, minute, and (optional) second of the start time for the job.

- Interval (optional): the Interval prompt appears only if you have specified an execution time. The first interval prompts you for units: *days*, *hours*, and *minutes*. The system then prompts you for the number of units.
- Command (required): without a command specified, the **addjob** command terminates, so this is how you exit **addjob**. After each command and its parameters, the system prompts you for an action to take if a failure occurs (see the **addjob** description for details).
- Because commands in a job do not immediately execute, the system does not check the validity of the commands and parameters to the same degree as it does for standard command entry. For example, if you enter **dncd** for a card slot that is out of range, the system flags the error, but it does not flag a card that is missing from a valid card slot.

Running a Job

The following steps aid in running a job:

- Use the **runjob** command to run a job manually. Specify the job number to run.
- While a job is running, “executing” flashes in the upper-left area of the screen.
- The **runjob** command runs a job regardless of the assigned execution time. The **runjob** command does not change the specified execution time.
- The **runjob** command itself can be in a job. Therefore, running one job can cause another job to start. The limitation to this is that a job cannot cause itself to run. For example, Job 1 cannot contain the command “runjob 1.” Also, Job 1 cannot have the command “runjob 2” if Job 2 contains the command “runjob 1.”
- After **runjob** executes, the screen displays the results for each command in the job.

Stopping a Job

The following steps aid in stopping a job:

- Use the **stopjob** command to stop a running job. The template for the current job appears on the screen along with the prompt, “Stop this and all currently executing jobs (y/n)?”
- The **stopjob** command works only on a job that is running. Because stopping a job can leave a task partially completed, use **stopjob** with caution.

Displaying Jobs

For displaying one or all jobs:

- Use the **dspjob** command to display the status of a job. This command displays the template for the specified job and includes the results of the last run for each command in the job.
- To display details of all current jobs, use the **dspjobs** command.

Editing a Job

The following information applies to editing a job. Before using an edited job, test it to ensure that it works.

- Use the **editjob** command to edit job parameters.
- When you enter the **editjob** command, the template of the specified job appears. The system prompts you to keep or change each item in the template. To change an item, type over the existing information, then press Return. (You can use any of the Control keys to edit existing information.) To keep the same parameter specification, press Return at the prompt.
- To insert a new command between existing commands in a job, press the ^ key while holding down the Control key. A new line opens above the command that is currently highlighted. Enter the new command at the “Enter Cmd” prompt.
- To delete a command from a job, two methods are available. One way is to backspace over the command when it appears on the command line, then press Return. The other way is to press the “x”-key while holding down the Control key.
- When commands are added to or deleted from a job, the system re-numbers the remaining commands.

Deleting a Job

Use the **deljob** command to delete a job. You cannot delete a job that is running. If necessary, stop the job with the **stopjob** command before deleting it.

Creating a Job Trigger

The following information applies to creating a job trigger:

- Use the **addjobtrig** command to configure a job to run if a line failure or repair-alarm occurs. (A “repair-alarm” occurs when a line or trunk is back up, and a message is sent to the event log.)
- The template on the screen prompts for a line type: “p” for packet line or trunk, “c” for circuit line, or “d” for a T3 (DS3) line. (Do not use the “d” option, as it represents the MT3 card, which is obsolete.)
- The template on the screen prompts for the slot number of the line on which an alarm triggers the job.
- The prompt requests you to specify whether the trigger should occur on the failure (“f”) or repair (“r”) of a line. Typically, you write a job that would run whenever a line fails, so you create its trigger with the “f”. Then you would write another job (to reverse the effects of the first job) that would run when the line repairs. This trigger would occur on the “r”, or repair of the line.

Summary of Commands

Table 12-1 shows the full command name and starting page for the description of each command.

Table 12-1 List of Job Commands

Command	Description	Page
addjob	Add a job	12-5
addjobtrig	Add a job trigger	12-8
deljob	Delete a job	12-10
deljobtrig	Delete job trigger	12-12
dspjob	Display a job	12-14
dspjobs	Display jobs	12-16
editjob	Edit a job	12-18
prtjob	Print a job	12-18
prtjobs	Print jobs	12-21
runjob	Run a job	12-22
stopjob	Stop a job	12-24

addjob

This command creates a new job. When you create a new job with **addjob**, your privilege level becomes the privilege level of the job itself. When adding commands to the job, you cannot add a command that requires a privilege higher than your privilege level. Furthermore, you must have a privilege level at least as high as the job to run the job (with **runjob**, for example).

The system does not check the commands' validity with respect to the current state of the network or for relationships to other commands in the job. To ensure that it works as expected, try running the job with **runjob**.

Full Name

Add a job

Syntax

addjob [description] [execution time, execution interval] <commands>

Related Commands

deljob, dspjob, dspjobs, editjob, prtjob, runjob, stopjob

Attributes

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

Example 1

```
addjob
```

Description

The system response is a series of prompts requesting details of the job. The system requests a job description (or name), an execution time for the job, a unit for the interval at which the job is to run (hours, for example), the number of units in the interval, the commands to execute, and what to do with the result.

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 16 1997 14:15 PST

                               Job 1    test
Last Execution Results: None          Status: Idle
Next Execution Time: 08/17/97 20:20:30 Interval: 1 days

1: prtlog
  - Failure Reaction: Repeat 2 Times and Abort      Exec. Results: None
  
```

Last Command: addjob

Next Command:

In this example, a new job is being created. The job number is “1.” The job description (or name) is “test.” The job is scheduled to run on August 17, at 2:20:30 PM and every day thereafter at the same time. The command in the job is **prtlog**. If this command fails when the job runs, it tries twice again and aborts if unsuccessful.

The “Enter Cmd” prompt at the bottom of the screen indicates you can enter the next command for the job. To exit **addjob**, press Return without entering a command.

Table 12-2 **addjob-Parameters**

Parameter	Description
command	<p>Specifies the syntax for a command to include in the job. The number of commands that can be included in a job is limited only by available memory.</p> <p>Not all commands can be included in a job. A job cannot contain commands that are above your privilege level. For example, if you have privilege level 3, your job cannot include the addtrk command because this command requires privilege level 1.</p>
failure reaction	<p>Specifies the desired reaction to the failure of a command in the job. Each command in the job must have a failure reaction. The failure reaction is specified in the following format <c a rc ra> <number of repetitions>. In this format:</p> <ul style="list-style-type: none"> c specifies that the job continues running. a specifies that the job must abort. rc specifies that the command should retry for the specified number of times and continue running the job even if the command fails during the retries. ra specifies that the command should retry for the specified number of times and abort the job if the command always fails during the retries.

Table 12-3 addjob–Optional Parameters

Parameter	Description
job description	A user-specified description of the job. This description can be up to 16 characters, including spaces.
execution time	Specifies the date and time to run the job. Without an execution time, the job can begin running only by the runjob command. Execution time is specified in the following format. (The <i>seconds</i> parameter is optional.) year (four digits) month (two digits) day hour (0–23) minute [seconds]
execution interval	Specifies an interval between job repetitions. The three possible execution intervals are: d (days) h (hours) m (minutes) The interval range is 1 minute to 45 days. If you do not specify an execution interval, the job runs once at execution time. If you specify an execution interval (d , h , or m), you must also specify the number of units in the interval.

addjobtrig

Configures a job to run if a failure or repair occurs on a trunk (narrowband or broadband), a line (voice, data, frame relay, ATM, narrowband, broadband), or a T3 (DS3). You can also use **addjobtrig** to allocate or release bandwidth from other connections. This bandwidth decision depends on whether the EIA lead status is “up” or “down.” For example, a job can be triggered to run if the RTS lead of an HDM/LDM port changes state. If the FRM you are using is an FRM-T1 or E1, it qualifies as a line and can be used as a job trigger.

A “line failure” is any alarm condition that takes the trunk or line out of service. Such a condition is always a major alarm. However, not all major alarms cause the trunk or line to be considered failed. Those that are considered failed are the ones that appear on the **dsptrks** or **dsplns** screens with a color associated with it, such as “Major - Local All Ones” or “Major - Remove Packet Out of Frame (Yel)”. Specifically excluded are all the statistical alarms, some of which may be major.

A “line repair” is the opposite of a “line failure”. A “repair” of a line occurs when the alarms on the line are removed.

Full Name

Add a job trigger

Syntax

addjobtrig <job_number> <line_type> <line_specifier> <fail/repair>

Related Commands

addjob, **dspjob**, **dspjobs**

Attributes

Privilege	1-5
Jobs	No
Log	No
Node	IPX, IGX, BPX
Lock	Yes

Examples

addjobtrig	1 p 14 f	trigger job 1 when TRK 14 fails
addjobtrig	3 c 15 r	trigger job 3 when CLN 15 repairs
addjobtrig	2 p 14 r	trigger job 2 when TRK 14 repairs
addjobtrig	3 d 27 E f	trigger job 3 when DS3 27 E (East) fails

```

alpha          TRM   YourID:1          IPX 16      9.1      Aug. 16 1997 14:22 PST

Job  Description      Next Execution      Status      Interval      Access Group
1    test              08/17/97 11:00:00  Idle        1 days        Group 1
      Trigger 1 - CLN 14          REPAIR

```

Last Command: addjobtrig 1 c 14 r

Next Command:

Example 2

```
addjobtrig 1 c 14 r
```

Description

Trigger job 1 whenever a repair of line 14 occurs.

Table 12-4 addjobtrig-Parameters

Parameter	Description
job number	Specifies the number of the job to trigger.
line type	Specifies the type of line. A “p” indicates any type of trunk (TRK). A “c” indicates any type of circuit line. (A “d” indicates a DS3 line. Do not specify the “d” option, as this represents a now-obsolete card--the MT3.)
line specifier	Specifies the slot number for trunks and lines. Use the standard nomenclature to designate trunks and lines. For example, depending on the card type (single-line or multi-line), specify either <slot.port>, or just <slot>.
fail/repair	Specifies whether the trigger occurs on the failure or repair of a line.
fail/repair	If the card is an SDP, LDP, HDM, or LDM, the fail and repair triggers occur only on the transitions of RTS (regardless of whether the port is DCE or DTE). If you select “fail,” the trigger is the transition of RTS from “on” to “off.” If you select “repair,” the trigger is the transition of RTS from “off” to “on.” To enable triggering on leads other than RTS, use the cnfict command.

deljob

Deletes a job. To delete a job, you must have a privilege level at least as high as the job itself. A job that is currently running cannot be deleted. If necessary, use **stopjob** to stop the job so that you can delete it.

Full Name

Delete a job

Syntax

deljob <job_number>

Related Commands

addjob, dspjob, dspjobs

Attributes

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

Example 1

```
deljob 4
```

Description

Delete job 4.

pubsigx1 TN SuperUser IGX 32 9.1 Sep. 3 1997 19:54 GMT

Job 4

Last Execution Results: None

Status: Locked

Next Execution Time:

Interval:

1: prtlog

- Failure Reaction: Abort

Exec. Results: None

2: dncd 6

- Failure Reaction: Repeat 12 Times and Abort

Exec. Results: None

3: dncd 6

- Failure Reaction: Repeat 12 Times and Continue

Exec. Results: None

This Command: deljob 4

Delete this job (y/n)?

Table 12-5 deljob-Parameters

Parameter	Description
job number	Specifies the number of the job.

deljobtrig

Deletes a job trigger. The **deljobtrig** command deletes one trigger at a time. If you delete a job by using the **deljob** command, all associated job triggers are deleted.

Full Name

Delete a job trigger

Syntax

deljobtrig <job_number> <trig_num>

Related Commands

addjobtrig, dspjobs

Attributes

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

Example 1

```
deljobtrig 1 1
```

Description

Delete job trigger 1 for job 1.


```

pubsigx1      TN      SuperUser      IGX 32      9.1      Sep. 3 1997  18:19 GMT

Job  Description      Next Execution      Status      Interval      Access Group
1    test1              2                  Idle              SuperUser
    Trigger 1 - PLN
2
3    test3              09/02/97 11:11:11  Idle              1 days        SuperUser
4
5
6

```

This Command: deljobtrig 1

Enter trigger number:

Table 12-6 deljobtrig-Parameters

Parameter	Description
job number	Specifies the number of the job.
trigger number	Specifies the number of the trigger to delete.

dspjob

The **dspjob** command displays the following information about a job.

- Job number and description
- Next execution date and time
- Status
- The time interval between successive executions of the job
- The results of the last execution of the job

This command requires at least the same privilege level as the person who created the job.

Full Name

Display jobs

Syntax

dspjob <job_number>

Related Commands

addjob, deljob, dspjob

Attributes

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

Example 1

```
dspjob 2
```

Description

Display job number 2.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 14:17 PST

Job 1 test

Last Execution Results: None

Status: Idle

Next Execution Time: 08/17/97 20:20:30

Interval: 1 days

1: prtlog

- Failure Reaction: Repeat 2 Times and Abort

Exec. Results: None

Last Command: dspjob 1

Next Command:

Table 12-7 dspjob-Parameters

Parameter	Description
job number	Specifies the the number of the job to display.

dspjobs

Displays the following information on each job:

- Job number
- Job description
- Next execution date and time
- Execution interval between jobs
- Access Group: The privilege level required to run or display the job

To see details of an individual job, use the **dspjob** command.

Full Name

Display jobs

Syntax

dspjobs

Related Commands

addjob, deljob, dspjob

Attributes

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

Example 1

```
dspjobs
```

Description

Display a summary of all jobs stored at the node.

System Response

alpha	TRM	YourID:1	IPX 16	9.1	Aug. 16 1997 14:16 PST	
Job	Description	Next Execution	Status	Interval	Access Group	
1	test	08/17/97 20:20:30	Idle	1 days	Group 1	

Last Command: dspjobs

Next Command:

editjob

Allows you to change any of the following items in a job:

- The job description
- Execution time
- Execution interval
- Individual commands in the job
- Failure reactions for each command

After you enter the **editjob** command, the system displays the template for the job. With **editjob**, you can edit, delete, or add a command. Each item in the template is successively displayed on the command line so that you can confirm or change the item. You cannot change the privilege level of a job.

The following is a list of actions you can take with **editjob**:

- To change an item in the job template, enter or type over the existing information on the command line and press the Return key.
- Use any of the control keys to change information on the command line. To keep the same value of an item, press the Return key at the prompt.
- To add a new command between existing commands in a job, hold down the Control key while you press the ^ key. A new line appears above the command that is highlighted. Enter the new command after the "Enter Cmd:" prompt and press Return.
- To add a new command to the end of a job, press the Return key after the last command in the job template.
- To delete a command from a job, either backspace over the command when it appears on the command line and press the Return key, or hold down the Control key while you press the "x"-key.
- To end the editing session, press the Return key when prompted for a new command or press the Del key.

When commands are added to or deleted from a job, the system re-numbers the commands. To test an edited job, run it with the **runjob** command.

Full Name

Edit a job

Syntax

editjob <job_number>

Related Commands

addjob, **deljob**, **dspjob**, **dspjobs**, **runjob**

Attributes

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

Example 1

```
editjob 1
```

Description

Edit job 1. The template for job 1 appears on the screen. The system displays the existing job description, which you can change or keep. To keep it, press Return. The system then displays the execution time. To change it to August 17, 1997 at 11:00:, for example, enter:

```
1997 8 17 11 00
```

If no other items need changing, press the Return key.

System Response

```
alpha          TRM   YourID:1          IPX 16      9.1    Aug. 16 1997 14:19 PST

Job 1 prtlog
Last Execution Results: None                Status: Editing
Next Execution Time: 08/17/97 11:00:00     Interval: 1 days

1: prtlog
  - Failure Reaction: Repeat 2 Times and Abort      Exec. Results: None
2:
```

```
Last Command: editjob 1
```

```
Next Command:
```

Table 12-8 editjob-Parameters

Parameter	Description
job number	Specifies the number of the job to edit.

prtjob

Prints the following information about a specific job:

- Job number
- Job description
- Next execution date and time
- Status
- Interval. The time interval between successive executions of the job
- Execution. The results of the last execution of the job

To print a job, you must have at least the same (or higher) privilege level as the person who wrote the job). See the **addjob** description for more information. The **prtjob** command uses the same syntax and prints the same information the **dspjob** command.

Full Name

Print job

Syntax

prtjob <job_number>

Related Commands

dspjob

Attributes

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

prtjobs

Prints the following information about all existing jobs:

- Job number
- Job description
- Next execution date and time.Status
- Execution interval between jobs
- Access Group: The privilege level required to run or display the job

For a printout on a single job, use the **prtjob** command. This command uses the same syntax, and prints the same information as is displayed using the **dspjobs** command. See the **dspjobs** command for syntax and output information.

Full Name

Print jobs

Syntax

prtjobs

Related Commands

dspjobs

Attributes

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

runjob

Runs a job. The **runjob** command runs a job regardless of its execution time. The **runjob** command does not change a Job's assigned execution time.

When you enter **runjob**, the system displays the job template and prompts, "Run this job (y/n)?" Enter "y" to start the job. Enter "n" to exit **runjob**. Four seconds pass before a job begins running after you enter "y." Pressing any keys briefly suspends a job, and four seconds of no keyboard activity must pass before the jobs resume. While a job is running, the system highlights the current command and updates command results.

You can include the **runjob** command in a job. Therefore, running one job can cause another job to run. The only limitation is that a job cannot cause itself to run. For example, Job 1 cannot include the command "runjob 1." Also, Job 1 cannot include the command "runjob 2" if Job 2 contains the command "runjob 1."

Full Name

Run a job

Syntax

runjob <job_number>

Related Commands

addjob, dspjobs, editjob, stopjob

Attributes

Privilege	1-6
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
runjob 1
```

Description

Run job 1

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 14:23 PST

Job 1 test

Last Execution Results: None

Status: Idle

Next Execution Time: 03/17/96 11:00:00

Interval: 1 days

1: prtlog

- Failure Reaction: Repeat 2 Times and Abort

Exec. Results: None

This Command: runjob 1

Run this job (y/n)?

Table 12-9 runjob-Parameters

Parameter	Description
job number	Specifies the number of the job to run.

stopjob

Stops all running and all waiting jobs. When you enter the **stopjob** command, the system prompts, “Stop all running and waiting jobs (y/n)?” Enter a “y” to stop running jobs and prevent all waiting jobs from beginning. Enter an “n” to exit **stopjob**. Because the **stopjob** command can leave a task partially executed, use **stopjob** with caution. You must have at least the same or higher privilege level of the creator of the jobs you want to stop.

Full Name

Stop job

Syntax

stopjob

Related Commands

runjob

Attributes

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

Example 1

```
stopjob
```

Description

Stop all jobs currently running or queued to run on the node. Confirm by entering: y.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 14:24 PST

Job 1 test

Last Execution Results: None

Status: Idle

Next Execution Time: 03/17/96 11:00:00

Interval: 1 days

1: prtlog

- Failure Reaction: Repeat 2 Times and Abort

Exec. Results: None

This Command: stopjob

Stop all running and waiting jobs (y/n)?

stopjob

Managing the Network

This chapter tells you how to use network administration commands. Examples of the tasks these commands perform are: creating a password, setting the network date and time, and adding a user.

Signing on to the System

Signing on to a node is a two-step process that requires you to enter a User ID and a password. The system or network administrator can provide a User ID and password to you. The User ID can be up to 12 characters. To protect the security of the system, you should change your password regularly. Only your system administrator can change the User ID. To sign on to a node:

- Step 1** Enter your user ID at the system prompt “Enter User ID.”
- Step 2** Enter your password at the “Enter Password” prompt. For initial sign-on, enter the password that the system administrator provides. You can change the password with the **cnfpwd** command.

After you sign on, the system is ready and so prompts you for the next command.

Signing Off the System

When you have completed a session and want to sign off, use the **bye** command. This command returns the display to the initial system sign-on prompt. If you enter the **bye** command when you have a virtual terminal connection to another node, the **bye** command ends the virtual terminal session and returns to the a local session. To end the local session and thus sign-off the system, again enter the **bye** command.

Creating a New Password

To change the password, takes the step in the list that follows. given to you by your System Administrator, or to change your present password to a different one, perform the following. To ensure the security of your system, your password should be changed on a regular basis. See the System Administrator for the recommended frequency of change.

- Step 1** Enter the **cnfpwd** command. The system prompts for your current password.
- Step 2** Enter your current password. The system prompts for a new password.
- Step 3** Enter a new password. Passwords must have 6–15 characters. The system prompts you to confirm the new password by typing it again.

Set Date and Time

Date and time are network-wide parameters. You can set the time zone for each node. The **cnfdate** command lets you set both time and date. The **cnftime** command lets you set the time for the entire network.

Summary of Commands

Table 13-1 shows the full name and starting page for the description of each network management command.

Table 13-1 **Commands for Managing a Network**

Command	Description	Page
adduser	Add user(s)	13-3
cnfpwd	Configure password	13-5
cnfsnmp	Configure SNMP parameters	13-7
cnfstatmast	Configure statistics master SV+ address	13-8
cnfsysparm	Configure system parameters	13-9
deluser	Delete user	13-15
dspnwip	Display network IP interface	13-17
dsppwd	Display password	13-18
dspsnmp	Display SNMP parameters	13-20
dspsnmpstats	Display SNMP statistics	13-22
dspusers	Display users	13-24
dspusertask	Display user task	13-27
dspusertasks	Display all user tasks	13-30

adduser

Adds a user to the network. The first time the new user ID is used for logon, a prompt appears asking the user to change from the default password to a new password which they enter using the **cnfpwd** command. Users with privilege levels 1 through 5 may add users with lower privilege levels. Since privilege level 6 has no user levels below it, level 6 cannot add any users.

Full Name

Add a user

Syntax

```
adduser <user_id> <privilege_level>
```

Related Commands

cnfpwd, deluser, dspusers

Attributes

Privilege	1–5
Jobs	No
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
adduser sarah 5
```

Description

Add a user sarah with privilege level 5.

System Response

```
alpha          TRM  YourID:1      IPX 16      9.1      Aug. 16 1997 13:48 PST  
  
YourID        1  
Sarah         5
```

Last Command: adduser Sarah 5

Next Command:

Table 13-2 adduser-Parameters

Parameter	Description
userid	Specifies the name of the user to add.
privilege level	Specifies the privilege level to grant to the added user. The range of levels is 1–6, where 1 is the highest level and 6 is the lowest.

cnfpwd

Changes the password associated with a User ID. To change a password, you must log into the node with the User ID whose password you want to change. Passwords are case-sensitive.

In a structured network, each domain requires you to have a password. In each domain, your password and associated privilege level can be the same or different from those in the other domains. For each domain, you can change the password at any node within the domain, including a junction node.

Full Name

Configure password

Syntax

```
cnfpwd <old password> <new password>
```

Related Commands

dsppwd, adduser, deluser, dspusers

Attributes

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

Example 1

```
cnfpwd
```

Description

Change your password.

Table 13-3 cnfpwd–Parameters

Parameter	Description
old password	Specifies the old password.
new password	Specifies the new password. Passwords must have 6–15 characters. Only letters, numbers, “_”, and “-” are allowed in a password. Spaces are not allowed.

cnffwswinit

Use the **cnffwswinit** command to inform the IPX/IGX/BPX the IP address of the machine that will be used to initiate a firmware or software download. This is used as a sort of a safety measure, to prevent downloads from being started anywhere in the network. You must have access to a node, and use the **cnffwswinit** command to set the IP address before a download will be accepted from that address.

Full Name

Configure firmware and software downloader's StrataView Plus IP address

Syntax

cnffwswinit <IP address of download initiator>

Related Commands

dsppwd, adduser, deluser, dspusers

Attributes

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

Example

cnffwswinit 172.29.52.17

Description

Configures the IP address of the machine running StrataView Plus from which the firmware and software download will be initiated to other nodes. If you do not provide the IP address for the StrataView Plus node from which to initiate the firmware/software download, you will be prompted to enter it.

Table 13-4 cnfpwd-Parameters

Parameter	Description
IP address	Specifies IP address of machine running StrataView Plus from from which the firmware and software download will be initiated to other nodes in the network.

cnfsnmp

Configures the SNMP GET and SET community strings.

Full Name

Configure SNMP parameters

Syntax

cnfsnmp <GET community string> <SET community string>

Related Commands

dspsnmp, **dspsnmpstats**

Attributes

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

Example 1

```
cnfsnmp
```

Description

Configure the SNMP GET and SET community string parameters.

Table 13-5 cnfsnmp–Parameters

Parameter	Description
get community string	Specifies the GET community string.
set community string	Specifies the SET community string.

cnfstatmast

Configures an IP address for the Statistics Master process in StrataView Plus. The **cnfstatmast** command defines the IP address for routing the messages to and from the Statistics Master in StrataView Plus.

The Statistics Master process requests and receives network statistics by using TFTP Get and Put messages. These TFTP messages pass between the node and the Statistics Master over IP Relay. See the **cnfnwip** description for details on setting a node address.

Full Name

Configure statistics master SV+ address

Syntax

cnfstatmast <IP Address>

Related Commands

cnfnwip, dspnwip

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
cnfstatmast 199.35.96.217
```

Description

Configure 199.35.96.217 as the IP address for the Statistics Master.

Table 13-6 cnfstatmast–Parameters

Parameter	Description
ip address	Specifies the IP address for the Statistics Master. IP addresses have 32-bits. The format of an IP address is x.x.x.x, where x is a value in the range 1–255.

cnfsysparm

Configures various system (or network) parameters. Network-wide parameters are configurable only when all nodes in the network are reachable. The parameters you specify with this command apply throughout the network regardless of which node you execute the command from. Take special note of the consequences of how you resolve conflicting values when networks are joined.

Each parameter is selectable by its index number. The paragraphs that follow describe each parameter by index number. Table 13-6 lists the defaults and ranges for each parameter.

Note Using **cnfsysparm** requires caution because network rerouting or loss of data may result from changes in system parameters. If necessary, consult with the TAC before you use **cnfsysparm**.

The following paragraphs describe the user-configurable system parameters by index number.

- 1: *Maximum Time Stamped Packet Age* is the maximum age a time-stamped packet can have before the switch discards it. If networks are joined and the *Maximum Time Stamped Packet Age* in the networks differ from each other, the lower value becomes the maximum.
- 2: *Fail Connections On Communication Break* - Determines whether connections are conditioned if the node at the other end of the connection becomes unreachable. If networks with different settings are joined, the resolution is to *enable* this parameter for the new network.
- 3–7: *Maximum Network Delay* for various types of compressed voice and high-speed data connections using SDP/LDP on an IPX node or LDM/HDM on an IGX node. When the total queueing delay on a route exceeds this value, connection traffic cannot use the route. The units of measure are milliseconds. When networks with different values are joined, the lower value becomes the *Maximum Network Delay*.
- 8–12: *Maximum Network Delay* for compressed voice and high-speed data connections. When the total queueing delay on a route exceeds the specified number of milliseconds, a connection traffic cannot use the route. When networks with different values are joined, the higher value becomes the *Maximum Network Delay*. Applicable cards are the UVM, CDP, or CVM.

Note In Release 9.1, when cost-based routing is configured, the delay cost cap is the maximum allowable end-to-end delay for the connection type. Use parameters 3 through 12 to configure this delay network-wide for all delay sensitive connections.

- 13: *Enable Discard Eligibility (DE)* bit for frame relay connections. Frames received with DE set have been sent on connections where the PIR has been exceeded and are eligible to be discarded. Enabling DE automatically enables CLP. CLP is disabled when Discard Eligibility is turned off except on the bursty data B queue when ForeSight is enabled.
- 14: *Use Frame Relay Standard Parameters Bc and Be* allows you to substitute the Frame Relay Forum standard Bc for VC Q depth and Be for PIR when you configure frame relay ports and connections. (The affected commands are **cnffrport**, **addcon** for Frame Relay, and **cnfcon**.) Screen displays for frame relay ports and connections reflect the choice for this parameter. Note that, if you change this parameter, a network-wide reset to the default values takes place for all frame relay classes, and the terminal displays a warning that the reset occurred.
- Obsolete: 15–20: *Maximum Local Delay for Interdomain UVM, CDP, or CVM to UVM, CDP, or CVM* connections is similar to parameters 8–12 described above. These parameters specify the maximum delay at the local domain in a structured network. These delays can be set only on a domain-by-domain basis (not end-to-end).

- 21: *FastPAD Jitter Buffer Size* is the size of the buffer for neutralizing jitter in connections that terminate on a FastPAD. The units of measurement are milliseconds.
- 22: *Number of Consecutive Invalid Login Attempts to Cause Major Alarm* specifies the number of failed login attempts that causes a major alarm. The default of 0 means that failed login attempts do not cause an alarm.
- 23: *Enable Connection Deroute Delay* is an enable that causes the network to wait a period of time before rerouting connections because of an error on a trunk. With *Enable Connection Deroute Delay* enabled, the network does not immediately reroute connections when statistical errors are occurring or when a trunk momentarily moves into a failure state then returns to normal operation. This feature is relevant when rerouting the connections is more of a disruption than the errors caused by the intermittent trunk.
- 24: *Frame Relay VCs Polling Rate* is the period between the start of polling cycles for both ATM and Frame Relay virtual connections. The possible values are 5, 10, and 15 seconds. As the number of connections in a network grows, greater intervals between cycles may be appropriate. The suggested intervals for the numbers of connections are:
 - 5 minute polling for up to 4000 connections
 - 10 minute polling for up to 8000 connections
 - 15 minute polling beyond 8000 connections.
- 25: *Port Polling Rate* is the time between the start of polling cycles for interval statistics. The possible values are 5, 10, and 15 minutes. (To specify the particular statistics, use the statistics manager in StrataView Plus.) As the number of connections in a network grows, greater intervals between cycles may be appropriate. The suggested intervals for the numbers of connections are:
 - 5 minutes for up to 300 connections
 - 10 minutes for up to 500 connections
 - 15 minutes for more than 500 connections.

Table 13-7 Defaults and Ranges of cnfsysparm Parameters

System Parameters			
Index	System-Wide Parameter	Default	Range
1	Max Time Stamped Packet Age (in milliseconds).	40	1–60
2	Fail Connections On Communication Break.	No	y or n
3	Max Network Delay for “v” connections (in milliseconds).	14	1–255
4	Max Network Delay for “c” connections (in milliseconds).	27	1–64
5	Max Network Delay for “d” connections (in milliseconds).	14	1–255
6	Max Network Delay for “a” connections (in milliseconds).	27	1–255
7	Max Network Delay for High Speed Data connections (in milliseconds).	40	1–255
8	Max Network Delay for CDP or CVM to CDP or CVM “v” connections (in milliseconds).	64	1–255
9	Max Network Delay for CDP or CVM to CDP or CVM “c” connections (in milliseconds).	64	1–64
10	Max Network Delay for CDP or CVM to CDP or CVM “t & p” connections (in milliseconds).	64	1–255
11	Max Network Delay for CDP or CVM to CDP or CVM “a” connections (in milliseconds).	64	1–255
12	Max Network Delay for CDP or CVM to CDP or CVM High Speed Data connections (in milliseconds).	64	1–255
13	Enable Discard Eligibility (DE).	No	y or n
14	Use Frame Relay standard parameters Bc and Be.	No	y or n
15	Obsolete: Max Local Delay for Interdom CDP to CDP “v” connections.	27	1–255
16	Obsolete: Max Local Delay for Interdom CDP to CDP “c” connections.	27	1–64
17	Obsolete: Max Local Delay for Interdom CDP to CDP “t & p” connections.	27	1–255
18	Obsolete: Max Local Delay for Interdom CDP to CDP “a” connections.	27	1–255
19	Obsolete: Max Local Delay for Interdom CDP to CDP High Speed Data connections.	27	1–255
20	Obsolete: Max Local Delay for Interdom High Speed Data connections (in milliseconds).	28	1–255
21	FastPAD De-jitter Buffer Depth (in milliseconds).	15	0–255
22	Number of Consecutive Invalid Login Attempts to Cause Major Alarm.	0	3–9
23	Enable Connection Deroute Delay.	Yes	y or n
24	Frame Relay VCs Polling Rate is the number of minutes between polling cycles for both ATM and Frame Relay virtual connections in the network.	5	5, 10, or 15
25	Port Polling Rate is the number of minutes between polling cycles for interval statistics gathered for all ports in the network.	5	5, 10, or 15

Full Name

Configure system parameters

Syntax`cnfsysparm <index> <value>`**Related Commands**

none

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

cnfsysparm

Description

Configure system-wide parameters. In response to the prompt “Continue” at the bottom of the display enter a “y” or press Return to display the second screen or enter “n” not to display the next screen. If you enter an “n,” the prompt line requests an index number.

System Response

```
swl71          VT    SuperUser      IGX 16      9.1 Oct. 14 1997 17:37 GMT
```

System-Wide Parameters

```

1 Max Time Stamped Packet Age (msec) ..... 32
2 Fail Connections On Communication Break ..... No
3 Max Network Delay for 'v' connections (msec)..... 14
4 Max Network Delay for 'c' connections (msec)..... 27
5 Max Network Delay for 't' & 'p' connections (msec)..... 14
6 Max Network Delay for 'a' connections (msec)..... 27
7 Max Network Delay for High Speed Data connections (msec)..... 32
8 Max Network Delay for CDP-CDP 'v' connections (msec)..... 32
9 Max Network Delay for CDP-CDP 'c' connections (msec)..... 32
10 Max Network Delay for CDP-CDP 't' & 'p' connections (msec)..... 32
11 Max Network Delay for CDP-CDP 'a' connections (msec)..... 32

```

This Command: cnfsysparm

Continue? n

System Response

In response to the “Continue” prompt at the bottom of the display, enter an “n,” then enter a “1” to enter the maximum allowable age for a time-stamped packet.

```
swl71          VT    SuperUser      IGX 16      9.1 Oct. 14 1997 17:37 GMT
```

System-Wide Parameters

```

1 Max Time Stamped Packet Age (msec) ..... 40
2 Fail Connections On Communication Break ..... No
3 Max Network Delay for 'v' connections (msec)..... 14
4 Max Network Delay for 'c' connections (msec)..... 27
5 Max Network Delay for 't' & 'p' connections (msec)..... 14
6 Max Network Delay for 'a' connections (msec)..... 27
7 Max Network Delay for High Speed Data connections (msec)..... 32
8 Max Network Delay for CDP-CDP 'v' connections (msec)..... 32
9 Max Network Delay for CDP-CDP 'c' connections (msec)..... 32
10 Max Network Delay for CDP-CDP 't' & 'p' connections (msec)..... 32
11 Max Network Delay for CDP-CDP 'a' connections (msec)..... 32

```

This Command: cnfsysparm 1

Enter new value (in Decimal):

Enter the number of the parameter you wish to change, along with the value. For example, to change the Maximum Time-Stamped Packet Age (1) from 40 milliseconds to 42 milliseconds, enter:

1 42

Note If you change item 15, the following prompt appears on the screen:

Changing this parameter will reset Frame Relay classes to their defaults. Continue (y/n)?

Changing parameter 15 requires a change in the Frame Relay classes. Since Frame Relay classes are not associated with a specific port (or port speed 0), no translation can be made. The values for Bc and Be, or VC Q depth and PIR are reset to their default values.

Table 13-8 cnfsysparm-Parameters

Parameter	Description
index	Specifies a numerical value that refers to the specific parameter to be changed. Index numbers and descriptions of the system-wide parameters are in the table that precedes the command summary.
value	Specifies a numerical value that applies to the selected parameter. See Table 13-6.

deluser

Deletes a user from the network. A user can delete users at any lower privilege level.

Full Name
Delete a user

Syntax
`deluser <user_id>`

Related Commands
`adduser`, `dspusers`

Attributes

Privilege	1-5
Jobs	No
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1
`deluser john`

Description
Delete user "john."

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 16 1997 13:52 PST
YourID         1
Sarah          5
```

\

Last Command: deluser John

Next Command:

Table 13-9 deluser-Parameters

Parameter	Description
userid	Specifies the name of the user to delete from the network.

dspnwip

Displays the IP address for each node in the network. The IP address is used to route TFTP messages transferring bulk statistics between the node and the StrataView Plus Statistics Master.

Full Name

Display network IP interface

Syntax

dspnwip

Related Commands

cnfwip

Attributes

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

Example 1

dspnwip

Description

Display network IP addresses.

```
axiom1      TN      bootzilla      IGX 32      9.1      Sep. 5 1997 18:18 GMT
```

```
Active Network IP Address:      169.134.90.106
Active Network IP Subnet Mask:   255.255.255.0
```

```
NodeName   IP Address
axiom1     169.134.90.111
           169.134.90.105
           169.134.90.101
axiom2     169.134.90.102
axiom3     169.134.90.103
axiom1     169.134.90.106
```

```
Last Command: dspnwip
```

```
Next Command:
```

dsppwd

Displays the password of the current user or any user at any lower privilege level.

Full Name

Display password

Syntax

```
dsppwd <user_id>
```

Related Commands

adduser, cnfpwd, deluser, dspusers

Attributes

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

Example 1

```
dsppwd yourid
```

Description

Display the password for user YourID.

System Response

```
alpha          TRM  YourID:1      IPX 16      9.1      Aug. 16 1997 13:56 PST
```

```
The password for YourID is liftoff
```

```
This Command: dsppwd YourID
```

```
This screen will self-destruct in ten seconds
```

```
Next Command: dsppwd YourID
```

Table 13-10 dsppwd-Parameters

Parameter	Description
userid	Specifies the user whose password is displayed.

dspsnmp

Display the following SNMP parameters for the current node:

- Get Community String
- Set Community String
- Trap Community String
- SNMP Set Request Queue Size
- SNMP Queued Request Timeout, in seconds
- SNMP Trap Event Queue Size

Full Name

Display SNMP parameters

Syntax

`dspsnmp`

Related Commands

cnfsnmp, dspsnmpstats

Attributes

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

Example 1

`dspsnmp`

Description

Display the SNMP parameters for the current node.

System Response

sw91 TN SuperUser IPX 8 9.1 Aug. 29 1997 13:45 GMT

Get Community String: NOACCESS

Set Community String: NOACCESS

Trap Community String: NOACCESS

SNMP Set Request Queue Size: 110

SNMP Queued Request Timeout (secs): 30

SNMP Trap Event Queue Size: 100

Last Command: dpsnmp

Next Command:

dspsnmpstats

Displays the following SNMP statistics for the node:

- SVC Requests Received, the number of SVC requests received.
- SVC Current Queue Length, the number of outstanding SVC requests in the queue.
- SVC Maximum Queue Length, the high watermark of the number of outstanding SVC requests in the queue.
- SVC Requests Timed Out, the number of SVC requests that have timed out.
- Current Trap Managers, the number of managers (up to 10) that are currently registered, their IP addresses and UDP ports.
- Traps Transmitted, the number of traps transmitted.
- TRAP Current Queue Length, the number of outstanding traps in the queue.
- TRAP Maximum Queue Length, the high watermark of the number of outstanding traps in the queue.
- TRAP Queue Events Discarded, the number of traps discarded due to queue overflow.
- Overflow Traps Transmitted, the number of overflow traps transmitted due to queue overflow.

Full Name

Display SNMP parameters

Syntax

dspsnmpstats

Related Commands

cnfsnmp, dspsnmp

Attributes

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

Example 1

dpsnmpstats

Description

Display SNMP statistics for the current node.

System Response

```
sw91          TN    SuperUser      IPX 8      9.1      Aug. 29 1997 13:21 GMT

SVC Requests Received:      256      Traps Transmitted:      256

SVC Current Queue Length:    0          TRAP Current Queue Length:    0
SVC Maximum Queue Length:    0          TRAP Maximum Queue Length:    0
SVC Requests Timed Out:      0          TRAP Queue Events Discarded: 196864
                                      Overflow Traps Transmitted: 100925440

Current Trap Managers:      0/10      Snmp_Trap_Db Ptr:      30DDCD02
```

Last Command: dpsnmpstats

Next Command:

dsptsmap

Displays the following SNMP statistics for the node:

- SVC Requests Received, the number of SVC requests received.
- SVC Current Queue Length, the number of outstanding SVC requests in the queue.
- SVC Maximum Queue Length, the high watermark of the number of outstanding SVC requests in the queue.
- SVC Requests Timed Out, the number of SVC requests that have timed out.
- Current Trap Managers, the number of managers (up to 10) that are currently registered, their IP addresses and UDP ports.
- Traps Transmitted, the number of traps transmitted.
- TRAP Current Queue Length, the number of outstanding traps in the queue.
- TRAP Maximum Queue Length, the high watermark of the number of outstanding traps in the queue.
- TRAP Queue Events Discarded, the number of traps discarded due to queue overflow.
- Overflow Traps Transmitted, the number of overflow traps transmitted due to queue overflow.

Full Name

Display SNMP parameters

Syntax

dspsnmpstats

Related Commands

cnfsnmp, dspsnmp

Attributes

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

Example 1

`dspsnmpstats`

Description

Display SNMP statistics for the current node.

System Response

```
sw91          TN    SuperUser      IPX 8      9.1      Aug. 29 1997 13:21 GMT

SVC Requests Received:      256      Traps Transmitted:      256

SVC Current Queue Length:    0          TRAP Current Queue Length:    0
SVC Maximum Queue Length:    0          TRAP Maximum Queue Length:    0
SVC Requests Timed Out:      0          TRAP Queue Events Discarded: 196864
                                           Overflow Traps Transmitted: 100925440

Current Trap Managers:      0/10      Snmp_Trap_Db Ptr:      30DDCD02
```

Last Command: `dspsnmpstats`

Next Command:

dspusers

Displays users. The privilege levels in the display are restricted to those of the current user and any privileges below the current user.

Full Name

Display users

Syntax

dspusers

Related Commands

adduser, deluser, dspusers

Attributes

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

Example 1

dspusers

Description

Display the users on a network.

dspusertask

Displays information about the current user-task. The displayed information varies with the user task. For example, information about a vt session slightly differs from a telnet session. The command takes a user task number as an argument. If the user task number is unknown, enter the command without a number to see a list of possible user tasks and the current user task. The types of user tasks are as follows:

- User, which can be the control terminal user, auxiliary port user, or StrataView
- A telnet session
- A virtual terminal session (vt)
- An SNMP agent
- A job

Full Name

Display user task

Syntax

`dspusertask` [user task number]

Related Commands

adduser, **cnfpwd**, **deluser**, **dspusers**, **dsppwd**

Attributes

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

Example 1

```
dspusertask
```

Description

Display user task information—without specifying a task in this case. This example shows a case in which the user has started a vt session on a node. See also step 2 of this example.

System Response

```

sw78          VT      SuperUser      BPX 15      9.1      Jan. 31 1997 15:52 PST

#  TASK  PURPOSE      USER ID      #  TASK  PURPOSE      USER ID
--  ----  -
1  USR1  control port  none         13 VT-5  VT              none
2  USR2  auxilry port  none         14 VT-6  VT              none
3  USR3  lan port(SV)  none         15 SNMP  agent          n/a
4  TN-1  lan (telnet)  none         16 JOBS  runs jobs      n/a
5  TN-2  lan (telnet)  none
6  TN-3  lan (telnet)  none
7  TN-4  lan (telnet)  none
8  TN-5  lan (telnet)  none
9  VT-1  VT: sw81     SuperUser    < You
10 VT-2  VT              none
11 VT-3  VT              none
12 VT-4  VT              none
    
```

This Command: dspusertask

Please Enter User Number:9

Example 1

9

Description

This example shows the screen after the you enter a 9 at the prompt in the *previous* screen, a case in which you already started a vt session on a node. Note that the display shows the status as a vt slave, and the node on which the vt session originated is sw81.

```

sw78          VT      SuperUser      BPX 15      9.1      Jan. 31 1997 15:53 PST

Task: VT-1
Logged in as: SuperUser
VT master: no
VT slave: yes      Master node is: sw81
VT pending: no

Public lock: no
Private lock: none

No command is currently running.
Previous command: dspusertask 9

Last Command: dspusertask 9

Next Command:
    
```

Table 13-11 dspusertask-Parameters

Parameter	Description
user task number	Specifies the number of the user task whose information is displayed.

dspusertasks

Displays general information about all current user-tasks. The types of user tasks are as follows:

- User, which can be the control terminal user, auxiliary port user, or StrataView
- A telnet session
- A virtual terminal session (vt)
- An SNMP agent
- A job

Full Name

Display user tasks

Syntax

dspusertasks

Related Commands

adduser, cnfpwd, deluser, dspusers, dsppwd, dspusertask

Attributes

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

Example 1

dspusertasks

Description

Display user task information.

System Response

```
sw151          TN      SuperUser      IGX 16      9.1          Aug. 14 1997 18:02 GMT
```

#	TASK	PURPOSE	USER ID	#	TASK	PURPOSE	USER ID
1	USR1	control port	SuperUser	13	VT-5	VT	none
2	USR2	auxilry port	none	14	VT-6	VT	none
3	USR3	lan port(SV)	none	15	SNMP	agent	n/a
4	TN-1	lan (telnet)	none	16	JOBS	runs jobs	n/a
5	TN-2	lan (telnet)	SuperUser				
6	TN-3	lan (telnet)	none				
7	TN-4	lan (telnet)	none				
8	TN-5	lan (telnet)	none				
9	VT-1	VT	none				
10	VT-2	VT	none				
11	VT-3	VT	none				
12	VT-4	VT	none				

```
Last Command: dspusertasks
```

```
Next Command:
```


Troubleshooting Commands

Table 14-1 lists the troubleshooting commands.

Table 14-1 Troubleshooting Command List

Command	Full Name	Page
addalmslot	Add alarm slot	14-3
addextlp	Add external loopback	14-5
addloclp	Add local loopback	14-11
addlocrmtlp	Add local-remote loopback	14-16
addrmtlp	Add remote loopback	14-18
clrchstats	Clear channel statistics	14-23
clrclkalm	Clear clock alarm	14-25
clrclnalm	Clear circuit line alarm	14-27
clrclnerrs	Clear circuit line errors	14-29
clreventq	Clear the events queues	14-31
clrlnalm	Clear line alarm	14-27
clrlnerrs	Clear line errors	14-29
clrlog	Clear log	14-35
clrmsgalm	Clear message alarm	14-37
clrphyslnalm	Clear physical line alarms	14-39
clrphyslnerrs	Clear physical line errors	14-43
clrportstats	Clear port statistics	14-45
clrslotalms	Clear slot alarms	14-47
clrsloterrs	Clear slot errors	14-48
clrtrkalm	Clear trunk alarm	14-49
clrtrkerrs	Clear trunk errors	14-51
clrtrkstats	Clear trunk statistics	14-53
cnfbus	Configure Bus	14-54
cnflnalm	Configure line alarm	14-56
cnfslotalm	Configure slot alarm	14-63
cnftrkalm	Configure trunk alarm	14-65

Command	Full Name	Page
dellp	Delete loopback	14-67
dncd	Down card	14-69
dspalms	Display alarms	14-71
dspbob	Display Breakout Box	14-74
dspbusbw	Display cell busallocated bandwidth	14-77
dspbuses	Display Buses	14-80
dspcnerrs	Display circuit line errors	14-82
dspeventq	Display the event queue names and the data in each.	14-31
dspfrcbob	Display FRC-2/FRM-2 breakout box	14-87
dsplog	Display event log	14-89
dspnlalmcnf	Display line alarm configuration	14-91
dsplnerrs	Display line errors	14-94
dsppwr	Display power	14-104
dspslotalms	Display slot alarms	14-109
dspsloterrs	Display slot errors	14-111
dspslotstatcnf	Display slot statistics configuration	14-114
dspsv3	Display SV+ Link Control Blocks	14-116
dsptrkerrs	Display individual or all trunk errors.	14-120
prtchnerrs	Print circuit line errors	14-124
prtlerrs	Print line errors	14-126
prtlog	Print log	14-125
prtrkerrs	Print trunk errors	14-128
resetcd	Reset card	14-129
resetpc	Reset Port Concentrator	14-131
switchcc	Switch controller card	14-132
tstcon	Test connection	14-134
tstconseg	Test connection segment	14-138
tstdelay	Test delay	14-141
tstpcs	Test Port Concentrator Shelf	14-144
tstport	Test port	14-145
tstubus	Test cell bus	14-145

addalmslot

Enables the MAJOR and MINOR alarm indicators on an Alarm Relay Card (ARC) or Alarm Relay Module (ARM). It also configures the slot to support external alarms from the Alarm Relay Interface (ARI) back card. You can use this command at any node that can provide external alarm indications to an alarm reporting system. The ARC or ARM can reside in any front slot but usually resides in the right-most slot.

Full Name

Add alarm slot

Syntax

```
addalmslot <slot number>
```

Related Commands

delalmslot, **dspalms**

Attributes

Privilege	1-4
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
addalmslot 16
```

Description

Enable alarm reporting from slot 16 in a node.

System Response

beta TRM YourID:1 IPX 32 9.1 Aug. 3 1997 14:27 MST

Alarm summary (Configured alarm slots: 16)

Connections Failed:	None
Groups Failed:	None
PLN Alarms:	1 Major
CLN Alarms:	None
Cards Failed:	1
Missing Cards:	None
Remote Node Alarms:	1 Major

Last Command: addalmslot 16

Next Command:

addextlp

Places an external device in loopback mode. The **addextlp** command applies to existing connections on an SDP, HDM, LDP, or LDM. A “near” loopback causes the NEAR EIA template to be applied. A ‘far’ loopback causes the FAR EIA template to be applied to the data port. The loopback remains in place until removed by the **dellp** command.

The **dsicons** command shows which connections are in loopback mode. Specifying an “n” after the channel indicates a near loopback, and an “f” indicates a far loopback. Because **addextlp** takes the specified connections out of service, use it only when a service disruption is tolerable.

Full Name

Add External Loop to Connection

Syntax

```
addextlp <channel> <n | f >
```

Related Commands

dellp, **dsicons**

Attributes

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

Example 1

```
addextlp 5.1 n
```

Description

Place the device connected to channel 5.1 in near loopback.

System Response

```

alpha          TRM  YourID:1          IPX 16    9.1    Aug. 16 1997 12:53 PST

Local          Remote          Remote
Channel        NodeName       Channel        State  Type    Compression  Code  Avoid  COS  O
N5.1          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: addextlp 5.1 n

Next Command:

Table 14-2 addextlp-Parameters

Parameter	Description
channel	Specifies the channel to loopback in the format <i>slot.port</i> .
n /f	Specifies whether the loopback is near or far. An “n” specifies near; an “f” specifies far. For a non-DDS port, the near or far modem is placed in loopback, if it supports this function. For a DDS port, the external DDS device is placed in CSU loopback. Local channels must be configured as OCU in order to place them in external loopback.

addInloclp

Establishes a local-remote loopback on a trunk or port card in a BPX. Applicable cards are the ASI, BNI, BME, and BXM.

While a line loop is present, software suspends the card self-test and the line diagnostic test that normally run when a line goes into alarm. Suspending these tests prevents background test loops from interfering with the user-specified loop.

Line loops are set for a line on the local node, so you cannot specify a remote node, and no network messaging is supported for setting a line loop of any type on a remote node.

Line loop status is displayed on the **dsplns** screen for an ASI, BME, or a BXM in port mode and the **dsprks** screen for a BNI, BME, or a BXM in trunk mode. Line loop status is not displayed for connections (**dsprcons**) affected by a line loop. Instead, a warning is printed if the line has connection traffic travelling on it, and an event is logged when a line loop is set or cleared. A line loop on a trunk generates Comm Fail, causing connections to fail and be rerouted.

For both of the **dsplns** and **dsprks** screens, the “J” character appears before the back card type in the “Type” column to indicate that the line local loopback is active.

The line loop state is not saved in BRAM or on a rebuild but is preserved on a switchover. After a rebuild, a line’s loop state is cleared.

Exercise caution when you set up loops on a BNI, BME, or BXM trunk because looping an added BNI/BXM/BME trunk causes Comm Failure and connection rerouting. BNI/BXM/BME **addInloclp** is not supported because of a lack of useful purpose, and Cisco recommends that you use **addInloclp** only when the trunk is upped but not added. On the other hand, the system does not prevent you from looping an added BNI/BXM/BME trunk port.

Full Name

Add local loopback to line

Syntax

```
addInloclp <slot.port>
```

Related Commands

dellnlp, **dsprks**, **dsplns**, **addInloclp**

Attributes

Privilege 1-2
 Jobs Yes
 Log Yes
 Node BPX
 Lock Yes

Example 1

addInloclp 9.1

Description

The **dsplns** display appears with the connection highlighted and a prompt for confirmation.

System Response

```
pubsbsp1      TN      SuperUser      BPX 15      8.4 Feb. 28 1997 01:25 GMT

Line  Type  Current Line Alarm Status
3.1   OC3   Clear - OK
3.2   OC3   Clear - OK
3.3   OC3   Clear - OK
3.4   OC3   Clear - OK
3.5   OC3   Clear - OK
3.8   OC3   Clear - OK
5.1   T3    Clear - OK
5.2   T3    Clear - OK
9.1   [OC3  Clear - OK
```

Last Command: addInloclp 9.1

Warning - Looping will interrupt data flow on the line
 Next Command:

Table 14-3 addInloclp—Parameters

Parameter	Description
slot.port	Specifies the port.

addInlocrmtlp

Establishes a local-remote loopback on a trunk or port card in a BPX. Applicable cards are the ASI, BNI, and BXM/BME.

While a line loop is present, software suspends the card self-test and the line diagnostic test that normally run when a line goes into alarm. Suspending these tests prevents background test loops from interfering with the user-specified loop.

Line loops are set for a line on the local node, so you cannot specify a remote node, and no network messaging is supported for setting a line loop of any type on a remote node.

Line loop status is displayed on the **dsplns** screen for an ASI or a BXM/BME in port mode and the **dsptrks** screen for a BNI or a BXM/BME in trunk mode. Line loop status is not displayed for connections (**dsicons**) affected by a line loop. Instead, a warning is printed if the line has connection traffic travelling on it, and an event is logged when a line loop is set or cleared. A line loop on a trunk generates Comm Fail, causing connections to fail and be rerouted.

For both of the **dsplns** and **dsptrks** screens, the “[” character appears before the back card type in the “Type” column to indicate that the line local-remote loopback is active.

The line loop state is not saved in BRAM or on a rebuild but is preserved on a switchover. After a rebuild, a line’s loop state is cleared.

Exercise caution when you set up loops on a BNI or BXM/BME trunk because looping an added BNI/BXM/BME trunk causes Comm Failure and connection rerouting. BNI/BXM/BME **addInlocrmtlp** is not supported because of a lack of useful purpose, and Cisco recommends that you use **addInloclp** only when the trunk is upped but not added. On the other hand, the system does not prevent you from looping an added BNI/BXM/BME trunk port.

Full Name

Add local-remote loopback to line

Syntax

```
addInlocrmtlp <slot.port>
```

Related Commands

dsptrks, **dsplns**, **dellnlp**, **addInloclp**

Attributes

Privilege 1-2
Jobs Yes
Log Yes
Node BPX
Lock Yes

Example 1

addInlocrmtlp 10.1

Description

The **dsptrks** screen appears with the loopback highlighted by the “[“ character.

System Response

```
pubsbsp1      TN      SuperUser      BPX 15      8.4 Feb. 28 1997 01:27 GMT

TRK   Type   Current Line Alarm Status      Other End
 1.1   T3     Clear - OK                      pubsaxil (AXIS)
 1.3   T3     Clear - OK                      pubsipx1/8
 4.1   OC3    Clear - OK                      -
10.1  [OC3   Clear - OK                      -
```

Last Command: addInlocrmtlp 10.1

Next Command:

Table 14-4 addInlocrmtlp—Parameters

Parameter	Description
slot.port	The port on the local node.

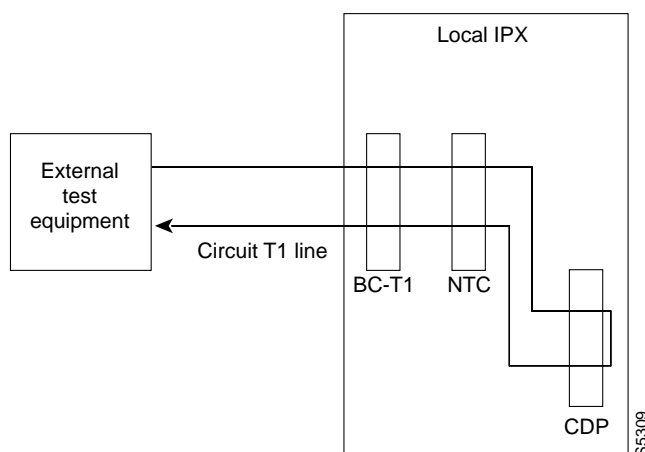
addloclp

The **addloclp** command places the following types of channels in local loopback mode:

- Voice
- Data
- Frame relay port
- Frame relay connection
- ATM connection
- Access device port

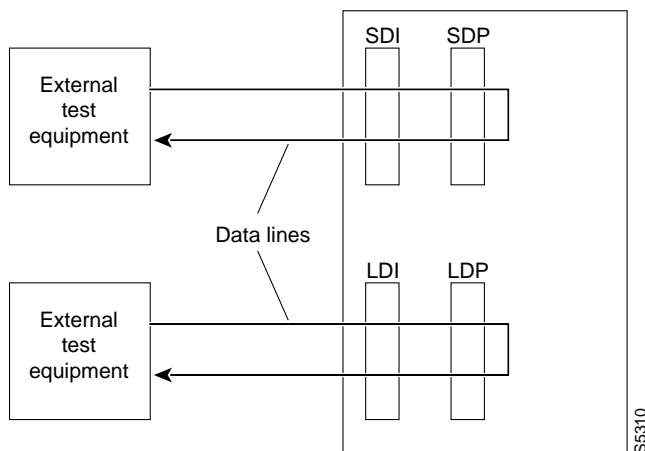
For voice connections, **addloclp** creates a signal path from a channel or group of channels on an incoming line then back out to the line. External test equipment can test the integrity of the path at the T1 DS0 level. Figure 14-1 shows a local loopback on a voice channel.

Figure 14-1 Local Loopback on a Voice Channel



For data connections, **addloclp** creates a signal path from the incoming data port or set of ports back to these same port(s) through the local CDP/CVM, SDP/HDM, or LDP/LDM. External test equipment can then test the integrity of the path. Figure 14-2 illustrates a local loopback on a data connection.

Figure 14-2 Local Loopback on a Data Connection



A local loopback can simultaneously exist at both ends of a connection. However, a local loopback and a remote loopback cannot co-exist on a connection. (See the **addrmtlp** description for more information.)

Prior to executing a loopback, the IPX or IGX node performs signal and code conditioning to remove the connection from service. The loopback remains in place until removed by the **dellp** command. Only existing connections can be looped back. Use the **dspecons** command to see which connections are looped back. A flashing right parenthesis “)” or left parenthesis “(“ is used in the connections display to indicate a loopback. The direction and location of the parenthesis depends on whether the loopback is local or remote and which end of the connection was used to establish the loopback. A local loopback initiated from the local end of the connection looks like this in the connections display:

Local Channel	Remote Node	Remote Channel
12.1	alpha	15.1

A local loopback initiated from the remote end of the connection looks like this:

Local Channel	Remote Node	Remote Channel
12.1	alpha	15.1

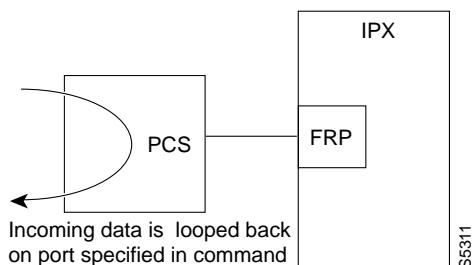
In frame relay connection loopback mode (DLCI included in command), all packets from the far-end of the connection are dropped. The far-end system software is informed of the loopback. In port loopback mode (port specified without a DLCI), all packets for this port are dropped and each opposite end is informed of the loopback mode. The format *slot.port* is used in port mode to loop just the port. The data is looped directly in the FRI back card, so no data reaches the MUXBUS or CELLBUS. The format *slot.port.DLCI* is used in connection (channel) mode to loop a specific channel. Note that this can affect up to 252 connections (channels) in port loopback mode.

Because the **addloclp** command causes the connection(s) to be removed from service, loopbacks should be used only when a service disruption can be tolerated. Remote loopbacks are established with the **addrmtlp** command. Both local and remote loopbacks are removed by the **dellp** command. Loopbacks for data channels can also be initiated by pressing a button on the front of the associated data card.

Frame Relay Local Loops with Port Concentrator

When a frame relay port or connection is located on a Port Concentrator instead of directly on an FRP or FRM card, the data test path is different. When just the *<port>* parameter is used, incoming data is looped back out on the Port Concentrator port:

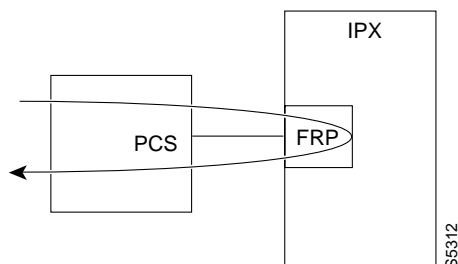
Figure 14-3 Local Loop on Port Concentrator



This loop disrupts all frame relay connections on the port that is under test.

When a connection is specified by *<port.dlci>* parameters, the connection is looped back at the FRM-2 or FRP-2 interface with the IGX or IPX card bus:

Figure 14-4 Local Loop on FRM-2 or FRP-2



As shown, this test verifies the operation of all components from the Port Concentrator to IPX/IGX interface with the FRP-2 or FRM-2 card.

This tests interrupts *only* the specified connection on the Port Concentrator port.

Full Name

Add local loopback to connections on a port

Syntax

addloclp *channel*

Related Commands

addrmtlp, **dellp**, **dspcons**, **dspfport**

Attributes

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

Example 1

```
addloclp 14.1
```

Description

The connections screen appears with connection 14.1 highlighted. The system prompts to confirm the loopback. To confirm it, enter y.

System Response

```

Next Command:
alpha          TRM   YourID:1      IPX 16    9.1    Aug. 23 1997 11:03 PST

  Local      Remote      Remote      State  Type      Compression  Code Avoid COS O
  Channel    NodeName    Channel
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: addloclp 14.1
```

```
Next Command:
```

Table 14-5 addloclp-Parameters (voice)

Parameter	Description
slot	Specifies the slot number of the card containing the port to loop at the local node.
channel (s)	Specifies the channel or set of channels to loop at the local node.
port	Where applicable for the connection type, specifies the port.

Table 14-6 addloclp–Parameters (data)

Parameter	Description
slot	Specifies the slot number of the card containing the port to loop at the local node.
port	Specifies the local port to loop at the local node.

Table 14-7 addloclp–Parameters (Frame Relay)

Parameter	Description
slot	Specifies the slot number of the FRP card containing the port to be looped at the local node.
port	Specifies the local port to loop at the local node.

Table 14-8 addloclp–Parameters (Frame Relay connection)

Parameter	Description
slot	Specifies the slot number of the FRP card containing the port to loop at the local node
port	Specifies the local port to loop at the local node.
DLCI	Specifies the Data Link Connection Identifier (DLCI) number of the channel to loop at the local node.

Table 14-9 addloclp–Parameters (ATM connection)

Parameter	Description
slot	Specifies the slot number of the ATM card containing the port to loop at the local node
port	Specifies the local port to loop at the local node.
vpi.vci	The vpi range is 0–7, and the vci range is 1–255. An asterisk (*) indicates a virtual path

Table 14-10 addloclp–Parameters (FTM connection with an Access Device attached)

Parameter	Description
slot	Specifies the slot number of the ATM card containing the port to loop at the local node
port	Specifies the local port to loop at the local node.
Access Device ID	The Access Device ID range is 1–255. Omit to loopback all access devices on the local port.
Connection ID	The Connection ID range is 1–252. Omit to loopback all connections on the local port.

addlocrmtlp

Adds support of a local-remote loopback for testing multi-segment connections in a tiered network. The effect is to instruct the remote node to set up a remote loopback. The **addlocrmtlp** command must be executed prior to using **tstcon** and **tstdelay** for multi-segment connections. For interface shelves, you can execute **addlocrmtlp** on either the interface shelf (after telnetting to it). After testing is complete, remove the local-remote loop by executing **dellp**. A parenthesis on the screen shows the loop's endpoint.

Full Name

Add local-remote loopback in a tiered network

Syntax

addlocrmtlp <channel(s)>

Related Commands

tstcon, **tstdelay**, **dellp**, **dspcons**, **dspfrport**

Attributes

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

Example 1

```
addlocrmtlp 5.1.3.100
```

Description

The connections screen appears with the connection highlighted and a prompt for confirmation.

System Response

```
pubsbpx1      TN      SuperUser      BPX      9.1      July 13 1997 14:41 PDT

Local         Remote      Remote
Channel       NodeName    Channel       State Type      Compress Code COS
5.1.3.100 (   pubsbpx3   7.1.2.49     Ok   aftr                0
```

This Command: addlocrmtlp 5.1.3.100

Loopback these connections (y/n)?

Table 14-11 addlocrmtlp-Parameters

Parameter	Description
channels(s)	The connection endpoint on the local node.

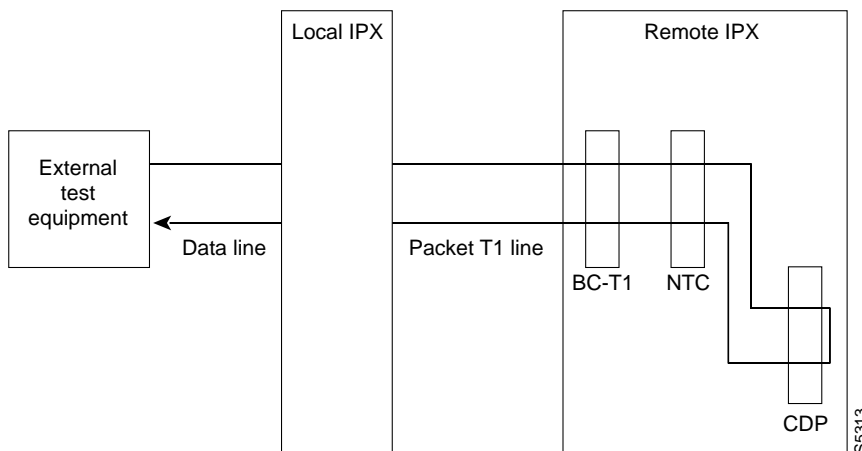
addrmtlp

The **addrmtlp** command places the following types of channels in remote loopback mode:

- Voice
- Data
- Frame relay port
- Frame relay connection
- ATM connection

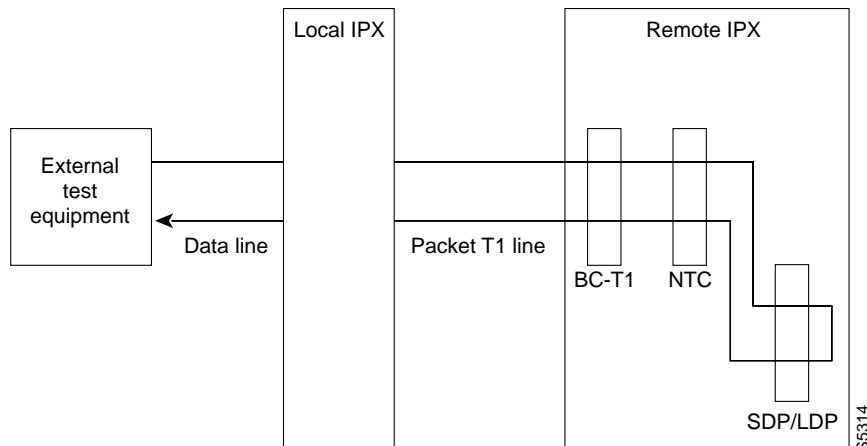
For voice connections, **addrmtlp** loops the information stream from the designated channel or group of channels on an incoming circuit line across the network and loops it back to the circuit line by way of the remote CDP or CVM. External test equipment can then test the integrity of the path at the T1 DS0 level. The following illustrates a remote loopback on a voice channel.

Figure 14-5 Remote Loopback on a Voice Channel



For data connections, **addrmtlp** transfers the information stream from the designated channels through the network and loops it back to the data port(s) through a remote SDP, HDM, LDM, or LDP. External test equipment can then test the integrity of the path. The following illustrates a data connection remote loopback.

Figure 14-6 Remote Loopback on a Data Connection



Prior to executing the loopback, the IPX or IGX node applies signalling template bit patterns to the A, B, C, and D signalling bits at the remote end to remove the connection from service. The loopback remains in place until removed by the **dellp** command. Only existing connections (those that have been entered with the **add-on** command) can be looped back. You cannot establish a remote loopback on a connection that is already looped back, either locally or remotely. (See the **addloclp** command for more information on local loopbacks.)

Use the **dspons** command to see which connections are looped back. A flashing left parenthesis “(“ or right parenthesis “)” is used in the connections display to indicate a loopback. The direction and location of the parenthesis depends on whether the loopback is local or remote and which end of the connection was used to establish the loopback. A remote loopback initiated from the local end of the connection looks like this:

Local Channel	Remote Channel	Remote Node
3.2	alpha	12.1

A remote loopback initiated from the remote end of the connection looks like this:

Local Channel	Remote Node	Remote Channel
3.2	alpha	12.1

For remote loopback of frame relay connections, note that in remote loopback mode, if the transmit minimum bandwidth exceeds the receive minimum bandwidth, then loopback data may be dropped. For this reason, the connection speeds will be checked and the user will receive the following message if there is a problem:

“Warning—Receiver's BW < Originator's BW-Data may be dropped.”

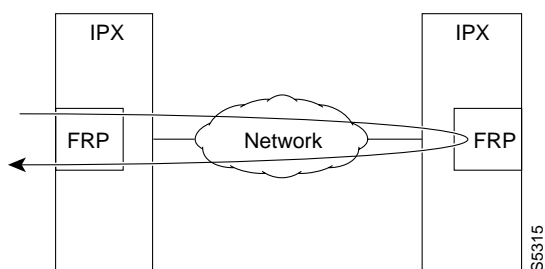
Because the **addrmtlp** command causes the connection to be removed from service, loopbacks should be used only when a service disruption can be tolerated. Local loopbacks are established with the **addloclp** command. Both local and remote loopbacks are removed by the **dellp** command. Loopbacks for data channels can also be initiated by pressing a push-button on the front of the associated data card.

Remote Loopbacks and the Port Concentrator Shelf

For frame relay remote loops, DLCI MUST be specified; entering only port number only generates an error message.

Unlike local loopbacks, remote loopbacks are not supported for frame relay *ports*; connections must be specified. Data incoming on the frame relay port is looped at the remote end FRM-2 or FRP-2 card.

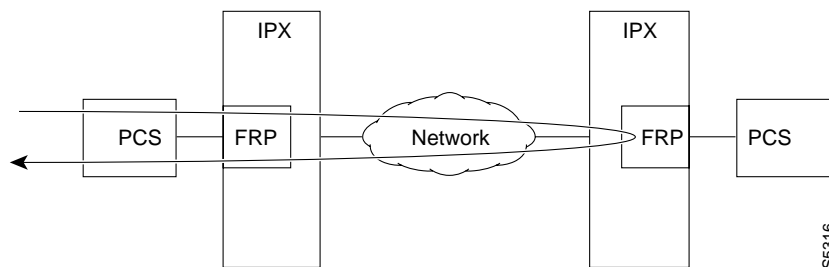
Figure 14-7 Frame Relay Remote Loops



As shown, this test verifies the operation of IPX/IGX network components up to the interface with the remote-end FRM-2 or FRP-2. This test interrupts data traffic for *only* the connection specified by DLCI.

If a port concentrator is attached to the FRM-2 or FRP-2, the only difference in the loop is that the port specified to loop data is on the Port Concentrator:

Figure 14-8 Frame Relay Remote Loops with Port Concentrator



Full Name

Add remote loopback to connections

Syntax

addrmtlp (see parameter tables)

Related Commands

addloclp, **dellp**, **dspcons**

Attributes

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

Example 1

```
addrmtlp 5.1
```

Description

The connections screen appears with connection 5.1 highlighted. The system prompts to confirm the loopback. To confirm it, enter y. A flashing parenthesis “)” appears in the “Remote Channel” column of the connection to indicate that the connection is looped back.

System Response

```
alpha          TRM   YourID:1      IPX 16    9.1    Aug. 16 1997 12:57 PST

  Local      Remote      Remote
  Channel    NodeName    Channel    State  Type    Compression  Code Avoid COS O
  5.1        beta        )25.1      Ok     256    7/8          0   L
  9.1.100    gamma      8.1.200    Ok     fr      0           0   L
  9.2.400    beta       19.2.302   Ok     fr      0           0   L
  14.1       gamma      15.1       Ok     v       0           0   L
```

```
Last Command: addrmtlp 5.1
```

```
Next Command:
```

Table 14-12 addrmtlp-Parameters (voice)

Parameter	Description
slot	Specifies the slot number of the card containing the port to loop at the local node.
channel (s)	Specifies the channel or set of channels to loop at the local node.
port	Where applicable for the connection type, specifies the port.

Table 14-13 addrmtlp–Parameters (data)

Parameter	Description
slot	Specifies the slot number of the card containing the port to loop at the local node.
port	Specifies the local port to loop at the local node.

Table 14-14 addrmtlp–Parameters (Frame Relay connections)

Parameter	Description
slot	Specifies the slot number of the FRP card containing the port to loop at the local node
port	Specifies the local port to loop at the local node.
DLCI	Specifies the Data Link Connection Identifier (DLCI) number of the channel to loop at the local node.

Table 14-15 addrmtlp–Parameters (ATM)

Parameter	Description
slot	Specifies the slot number of the card containing the port to loop at the local node.
channel (s)	Specifies the channel or set of channels to loop at the local node.
port	Where applicable for the connection type, specifies the port.
vpi.vci	Specifies vpi/vci.

Table 14-16 addloclp–Parameters (FTM connection with an Access Device attached)

Parameter	Description
slot	Specifies the slot number of the FTM card containing the port to loop at the local node
port	Specifies the local port to loop at the local node.
Access Device ID	The Access Device ID range is 1–255.
Connection ID	The Connection ID range is 1–252. .

clrchstats

Clears the channel utilization statistics for either all frame relay channels or a specified frame relay channel. Statistics generated within the last one minute are not cleared.

Full Name

Clear channel statistics

Syntax

clrchstats <channel | *>

Related Commands

dspchstats

Attributes

Privilege	1-5
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
clrchstats 9.2.400
```

Description

Clear the statistics of channel 9.2.400.

System Response

```

alpha          TRM   YourID:1          IPX 16    9.1    Aug. 16 1997 13:24 PST

Channel Statistics for 9.2.400    Cleared: Aug. 16 1997 13:23
MIR: 9.6 kbps                    Collection Time: 0 day(s) 00:02:42    Corrupted: NO
                                Frames   Avg Size Avg   Util           Packets   Avg
                                (bytes) (fps)  (%)           (pps)
From Port:                      0         0     0   0
To Network:                     0         0     0   0           0         0
Discarded:                      0         0     0   0
From Network:                   0         0     0   0           0         0
To Port:                        0         0     0   0
Discarded:                      0         0     0   0           0         0

                                ECN Stats: Avg Rx VC Q:           0   ForeSight RTD   --
Min-Pk bytes rcvd:             0   FECN Frames:           0   FECN Ratio (%)   0
Minutes Congested:            0   BECN Frames:           0   BECN Ratio (%)   0

This Command: clrchstats 9.2.400

OK to clear (y/n)?
    
```

Table 14-17 clrchstats-Parameters

Parameter	Description
channel	Specifies the frame relay channel in the format <i>slot.port.DLCI</i> . A "*" specifies all channels.

clrclkalm

Clears the alarm condition attached to a clock source, either circuit line or trunk. The clock test runs continuously in a node, comparing the frequency of the node's clock source to a reference on the NPC/BCC/CC/control card. If a clock source is found to be outside preset frequency limits, it is declared defective and another clock source is selected. In order for the node to return to the original clock source, the alarm must be cleared using the **clrclkalm** command. The alarm may be either a "Bad Clock Source" or "Bad Clock Path" alarm.

Full Name

Clear clock alarm

Syntax

clrclkalm <line type> <line number>

Related Commands

cnfelksrc, dspclksrcs, dspclns, dspcurclk, dsptrks

Attributes

Privilege	1-5
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
clrclkalm c 12
```

Description

Clear a clock alarm on circuit line 12

Example 2

```
clrclkalm p 12
```

Description

Clear a clock alarm on packet line 12

Table 14-18 circlkalm-Parameters

Parameter	Description
c/p	Specifies the type of line. A "c" is entered for a circuit line, and a "p" is entered for a trunk.
line number	Specifies the number of the circuit or trunk.

clrclnalm

Clears the alarms associated with a circuit line. Since the statistical alarms associated with a circuit line have associated integration times, they can keep a major or minor alarm active for some time after the cause has been rectified. This command allows these alarms to be cleared, allowing any new alarms to be quickly identified. The **clrclnalm** command can only clear alarms caused by the collection of statistical data. Alarms caused by a network failure cannot be cleared. For example, an alarm caused by a collection of bipolar errors can be cleared, but an alarm caused by a card failure cannot.

Full Name

Clear circuit line alarm

Syntax

```
clrclnalm <line_number> <fail_type>
```

Related Commands

dspclns, **dspclnerrs**

Attributes

Privilege	1-5
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
clrclnalm 14 2
```

Description

Clear the minor alarm caused by frame slips on circuit line 14.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 13:10 PST

Line Alarm Configuration

Violation	Rate	Minor		Major		
		Alarm Time	Clear	Rate	Alarm Time	Clear
1) Bpv	10E-7	10 min	3 min	10E-3	10 sec	10 sec
2) Fs	.01%	10 min	3 min	.1%	10 sec	10 sec
3) Oof	.0001%	10 min	3 min	.01%	10 sec	10 sec
4) Vpd	2%	5 min	3 min	5%	60 sec	10 sec
5) Tsdp	.01%	5 min	3 min	.1%	60 sec	10 sec
6) Ntsdp	.01%	5 min	3 min	.1%	60 sec	10 sec
7) Pkterr	.01%	10 min	3 min	.1%	125 sec	10 sec
8) Los	.0001%	10 min	3 min	.01%	10 sec	10 sec

This Command: clrclnalm 14 2

Continue?

Table 14-19 clrclnalm-Parameters

Parameter	Description
line number	Specifies the number of the line.
failure type	Specifies the type of alarm to clear.

clrclnerrs

Clears the errors associated with a circuit line. Since the statistical alarms associated with a circuit line have associated integration times, they can keep a major or minor alarm active for some time after the cause has been rectified. This command allows these alarms to be cleared, allowing any new alarms to be quickly identified. The **clrclnerrs** command can clear only those alarms that the collection of statistical data has caused. Alarms caused by a network failure cannot be cleared by **clrclnerrs**.

Full Name

Clear circuit line errors

Syntax

clrclnerrs [<line_number>]

Related Commands

dspclnerrs, **prtclnerrs**

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
clrclnerrs
```

Description

Clear circuit line error counts. In response to the prompt, enter “y” to reset all circuit line error counts to “0.”

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 13:12 PST

Total Errors

From	Code	Frame	Out of	Loss of	Frame	CRC	Out of	
CLN	Errors	Slips	Frames	Signal	BitErrs	Errors	MFrames	AIS-16
14		0	0	0	-	0	-	-

Last Command: clrclnerrs

Next Command:

clreventq

Clears high water marks for fail handler event queues.

Full Name

Clear event queues from the fail handler

Syntax

```
clreventq
```

Related Commands

```
dspeventq
```

Attributes

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

Example 1

```
clreventq
```

Description

Clear the fail handler event queue.

System Response

sw151 TN SuperUser IGX 16 9.1 Sep. 12 1997 19:18 GMT

QUEUE		LENGTH		THROTTLING
NUM	NAMES	MAX	HIGH CURRENT	POINT
1	Fail_Xid		26 1	7000
2	Fail_Q		25 0	
3	Mt_Sv_Q[0]	300	9 0	270
4	sv_mt_bufq		9 0	

This Command: clreventq

OK to clear HIGH counts(y/n)?

clearnerrs

Clears accumulated line error counts for all lines on a node.

Full Name

Clear line errors

Syntax

clearnerrs [<line_number>]

Related Commands

dsplnerrs, prtlnerrs

Attributes

Privilege	1-5
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
clearnerrs
```

Description

Clear the line error counts. In response to the prompt enter “y” to reset all line error counts to “0.”

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 13:12 PST

Total Errors

From	Code	Frame	Out of	Loss of	Frame	CRC	Out of	
CLN	Errors	Slips	Frames	Signal	BitErrs	Errors	MFrames	AIS-16
14		0	0	0	-	0	-	-

Last Command: clrlnerrs

Next Command:

clrlog

Clears the event log. When the log is cleared, one entry remains, "Info Log Cleared". Before the event log is cleared, a prompts you to confirm. See the **dsplog** command for more information on the event log.

Full Name

Clear event log

Syntax

clrlog

Related Commands

dsplog

Attributes

Privilege	1-5
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
clrlog
```

Description

Clear the event log. When the log is cleared, one entry remains, "Info Log Cleared." Enter "y" to confirm.

System Response

```
sw151          TN   SuperUser      IGX 16    9.1      Sep. 12 1997 19:19 GMT

Most recent log entries (most recent at top)
Class  Description                                     Date      Time
Info   User SuperUser logged out (Local)                09/12/96 18:18:57
Major  LN 5.6 Loss of Sig (RED)                          09/12/96 18:12:22
Info   User SuperUser logged out (Local)                09/12/96 18:11:17
Info   Clock switch to oscillator of SCC                 09/12/96 18:10:46
Clear  LN 5.6 OK                                         09/12/96 18:05:11
Minor  LN 5.6 Out of Multi-Frames                        09/12/96 18:03:27
Info   Clock switch to LINE 5.6                          09/12/96 18:03:12
Clear  LN 5.6 OK                                         09/12/96 18:02:42
Info   Clock switch to oscillator of SCC                 09/12/96 17:59:24
```

clrlog

```
Major LN 5.6 Loss of Sig (RED) 09/12/96 17:59:24
Info  Clock switch to LINE 5.6 09/12/96 17:59:20
Clear LN 5.6 OK 09/12/96 17:59:20
Major LN 5.6 Loss of Sig (RED) 09/12/96 17:58:51
```

This Command: clrlog

OK to clear (y/n)?

clrmsgalm

Clears the minor alarm due to an alarm message received at an alarm collection port.

Full Name

Clear message alarm

Syntax

clrmsgalm

Related Commands

dspalms, dsplog

Attributes

Privilege	1-5
Jobs	No
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
clrmsgalm
```

Description

Clear a minor alarm due to an alarm message.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 23 1997 10:59 PST

Last Command: clrmsgalm

No message alarm set

Next Command:

clrphyslnalm

Clears the specified statistical alarm associated with a physical line on a UXM card. The physical line statistical alarms include LOS, LOF, AIS, YEL, LOP, Path AIS, and Path YEL. You can display these alarms using the **dspphysln** command. These alarms are shown as the physical line status, at the top of the display, when you run the **dspphysln** command. Alarms caused by a network failure cannot be cleared. For example, an alarm caused by a collection of bipolar errors can be cleared, but an alarm caused by a card failure cannot.

Full Name

Clear physical line alarm

Syntax

```
clrphyslnalm <line_number> <fail_type>
```

Related Commands

dspphyslns, **dspphyslnerrs**

Attributes

Privilege	1-5
Jobs	No
Log	Yes
Node	IGX
Lock	Yes

Example 1

```
clrphyslnalm 10.1
```

Description

Clear an alarm on physical line 10.1.

System Response

sw199 TN StrataCom IGX 16 9.1.w9 Apr. 9 1998 18:10 GMT

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
1) Bpv	10E-7	10 min	3 min	10E-3	30 sec	10 sec
2) Fs	.01%	10 min	3 min	.1%	30 sec	10 sec
3) Oof	.0001%	10 min	3 min	.01%	30 sec	10 sec
4) Los	.0001%	10 min	3 min	.01%	30 sec	10 sec
5) Fer	.01%	10 min	3 min	.1%	200 sec	10 sec
6) CRC	.01%	10 min	3 min	.1%	200 sec	10 sec
7) Oom	.001%	10 min	3 min	.1%	30 sec	10 sec
8) Ais16	.0001%	10 min	3 min	.01%	30 sec	10 sec

This Command: clrphysnalm 10.1

Continue?

sw199 TN StrataCom IGX 16 9.1.w9 Apr. 9 1998 18:11 GMT

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
9) Pkoof	.01%	10 min	3 min	.1%	200 sec	10 sec
10) Pkterr	.01%	10 min	3 min	.1%	125 sec	10 sec
11) Badclk	.1%	10 min	3 min	1%	50 sec	10 sec
12) Vpd	2%	5 min	3 min	5%	60 sec	10 sec
13) Tsdp	.01%	5 min	3 min	.1%	60 sec	10 sec
14) Ntsdp	.01%	5 min	3 min	.1%	60 sec	10 sec
15) Pccpd	.001%	5 min	3 min	.1%	60 sec	10 sec
16) Bdapd	.001%	5 min	3 min	.1%	60 sec	10 sec

This Command: clrphysnalm 10.1

Continue?

sw199 TN StrataCom IGX 16 9.1.w9 Apr. 9 1998 18:11 GMT

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
17) Bdbpd	.001%	5 min	3 min	.1%	60 sec	10 sec
18) Lcv	10E-5	10 min	3 min	10E-3	30 sec	10 sec
19) Pcvl	10E-7	10 min	3 min	10E-3	30 sec	10 sec
20) Pcvp	10E-7	10 min	3 min	10E-3	30 sec	10 sec
21) Bcv	10E-7	10 min	3 min	10E-3	30 sec	10 sec
22) Rxvdp	1%	5 min	3 min	4%	60 sec	10 sec
23) Rxtspd	.01%	5 min	3 min	.1%	60 sec	10 sec
24) Rxbdapd	.001%	5 min	3 min	.1%	60 sec	10 sec

This Command: clrphyslnalm 10.1

Continue?

sw199 TN StrataCom IGX 16 9.1.w9 Apr. 9 1998 18:11 GMT

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
25) Rxbdbpd	.001%	5 min	3 min	.1%	60 sec	10 sec
26) Rxntspd	.01%	5 min	3 min	.1%	60 sec	10 sec
27) Rxhppd	.001%	5 min	3 min	.1%	60 sec	10 sec
28) Atmhcc	.1%	10 min	3 min	1%	120 sec	10 sec
29) FSyncErr	.01%	10 min	3 min	.1%	200 sec	10 sec
30) Rxspdm	.01%	4 min	2 min	.001%	30 sec	5 sec
31) CGWpktds	.01%	5 min	3 min	1%	60 sec	10 sec
32) CGWcelld	.01%	5 min	3 min	1%	60 sec	10 sec

This Command: clrphyslnalm 10.1

Continue?

sw199 TN StrataCom IGX 16 9.1.w9 Apr. 9 1998 18:12 GMT

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
33) Txntscds	.001%	5 min	3 min	.1%	60 sec	10 sec
34) Txhpcdsc	.001%	5 min	3 min	.1%	60 sec	10 sec
35) Txvcdscd	.1%	5 min	3 min	.0001%	60 sec	10 sec
36) Ttxtscdsc	.01%	5 min	3 min	.1%	60 sec	10 sec
37) Txbdacds	.001%	5 min	3 min	.1%	60 sec	10 sec
38) Txbdbcds	.001%	5 min	3 min	.1%	60 sec	10 sec
39) Txcbrcds	.001%	5 min	3 min	.1%	60 sec	10 sec
40) Txabrcds	.001%	5 min	3 min	.1%	60 sec	10 sec

This Command: clrphyslnalm 10.1

Continue?

sw199 TN StrataCom IGX 16 9.1.w9 Apr. 9 1998 18:12 GMT

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
41) Txvbrcds	.001%	5 min	3 min	.1%	60 sec	10 sec
42) TxGwFPds	.01%	5 min	3 min	1%	60 sec	10 sec
43) RxGwCLds	.01%	5 min	3 min	1%	60 sec	10 sec

This Command: clrphyslnalm 10.1

Enter Type:

Table 14-20 **clrphyslnalm-Parameters**

Parameter	Description
line number	Specifies the number of the physical line. The format is either <i>slot</i> (for a single-trunk card) or <i>slot.port</i> .
failure type	Specifies the type of alarm to clear. If not specified, the system prompts with Enter Type:.

clrphyslnerrs

Clears the errors associated with a UXM physical line. Since the statistical alarms associated with a circuit line have associated integration times, they can keep a major or minor alarm active for some time after the cause has been rectified. This command allows these alarms to be cleared, allowing any new alarms to be quickly identified. The **clrphyslnerrs** command can clear only those alarms that the collection of statistical data has caused. Alarms caused by a network failure cannot be cleared by **clrphyslnerrs**.

Full Name

Clear UXM physical line errors

Syntax

clrphyslnerrs [<line_number>]

Related Commands

dspphyslnerrs, **prtphyslnerrs**

Attributes

Privilege	1-5
Jobs	Yes
Log	Yes
Node	IGX
Lock	Yes

Example 1

```
clrphyslnerrs 11.3
```

Description

Clear UXM physical line error counts from line on port 3 of slot 11. In response to the prompt, enter “y” to reset all circuit line error counts to “0.”

System Response

sw199 TN StrataCom IGX 16 9.1.w9 Apr. 9 1998 18:10 GMT

Line Alarm Configuration

Violation	Rate	Minor			Major		
		Alarm Time	Clear	Rate	Alarm Time	Clear	
1) Bpv	10E-7	10 min	3 min	10E-3	30 sec	10 sec	
2) Fs	.01%	10 min	3 min	.1%	30 sec	10 sec	
3) Oof	.0001%	10 min	3 min	.01%	30 sec	10 sec	
4) Los	.0001%	10 min	3 min	.01%	30 sec	10 sec	
5) Fer	.01%	10 min	3 min	.1%	200 sec	10 sec	
6) CRC	.01%	10 min	3 min	.1%	200 sec	10 sec	
7) Oom	.001%	10 min	3 min	.1%	30 sec	10 sec	
8) Ais16	.0001%	10 min	3 min	.01%	30 sec	10 sec	

This Command: clrphyslnalm 10.1

Table 14-21 clrphyslnerrs-Parameters

Parameter	Description
line number	Specifies the physical line. The format is either <i>slot</i> (for a single-trunk card) or <i>slot.port</i> .

clrportstats

Clears the statistics for any port on an FRP. This includes the data byte count in the transmit and receive directions and error counts associated with the port. Statistical accumulation then resumes for that port.

Statistics collecting takes place once per minute, so **clrportstats** may not clear statistics that are less than one minute old.

Full Name

Clear port statistics

Syntax

clrportstats <port | *>

Related Commands

dspportstats

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
clrportstats 9.1
```

Description

Clear the port statistics for port 1 on an FRP card in slot 9. Type “y” to confirm.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 23 1997 10:57 PST

Port Statistics for 9.1 Cleared: Aug. 11 1997 15:32
Port Speed: 256 kbps Collection Time: 11 day(s) 19:22:09 Corrupted: YES

	Bytes	Average (kbps)	Util (%)	Frames
From Port:	0	0	0	0
To Port:	0	0	0	0
Frame Errors		LMI Receive Protocol Stats	Misc Statistics	
Invalid CRC	0	Status Enq Rcvd	0	Avg Tx Port Q 0
Invalid Alignment	0	Status Xmit	0	FECN Frames 0
Invalid Frm Length	0	Asynch Xmit	0	Ratio (%) 0
Invalid Frm Format	0	Seq # Mismatches	0	BECN Frames 0
Unknown DLCIs	0	Timeouts	0	Ratio (%) 0
Last Unknown DLCI	0	Invalid Req	0	Rsrc Overflow 0
		Sig Protocol: None		DE Frms Dropt 0

This Command: clrportstats 9.1

OK to clear port statistics (y/n)?

clrslotalms

Clears the alarm messages associated with the alarms displayed for the Display Slot Alarms command. Alarm messages are cleared for the specified slot only. These counters should be cleared before beginning any monitoring session. This command prompts the user with a “OK to Clear?” message before actually clearing the counters. Use dspslotalms to observe the slot alarms. Refer to the dspslotalms command for a description of the counters cleared by the clrslotalms command.

Full Name

Clear slot alarms

Syntax

clrslotalms parameters

Related Commands

dpslotalms

Attributes

Privilege	1-5
Jobs	Yes
Log	Yes
Node	BPX
Lock	Yes

Example 1

```
clrslotalms 3
```

Description

Clear alarm on slot 3.

Table 14-22 clrslotalms-Parameters

Parameter	Description
slot number	Specifies shelf slot in the BPX node.

clrsloterrs

Clears the counters for the error counts displayed for the Display Slot Errors command. Counters are cleared for the specified slot only. These counters should be cleared before beginning any monitoring session. This command prompts the user with a “OK to Clear?” message before actually clearing the counters. Use `dspsloterrs` to observe the **slot errors**. Refer to the `dspsloterrs` command for a description of the counters cleared by the **clrsloterrs** command.

Full Name

Clear slot errors

Syntax

clrsloterrs <slot number | *>

Related Commands

dspsloterrs

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
clrsloterrs 3
```

Description

Clear the slot errors in slot 3.

Table 14-23 clrsloterrs–Parameters

Parameter	Description
slot number	Specifies the shelf slot in the node.

clrtrkalm

Clears statistical alarms associated with either a physical or virtual trunk. Since the statistical alarms associated with a trunk have associated integration times, they can keep a major or minor alarm active for some time after the cause has been rectified. The **clrtrkalm** allows these alarms to be cleared, allowing any new alarms to be quickly identified.

The **clrtrkalm** command can only clear alarms caused by the collection of statistical data. Alarms caused by a network failure cannot be cleared. For example, an alarm caused by a collection of bipolar errors can be cleared, but an alarm caused by a card failure cannot.

Full Name

Clear trunk alarm

Syntax

clrtrkalm <trunk number> <failure type>

Related Commands

dsptrks, **dsptrkerrs**

Attributes

Privilege	1-5
Jobs	No
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
clrtrkalm
```

Description

Statistical trunk alarms are cleared.

System Response

```
sw199          TN      StrataCom      IGX 16      9.1.w9      Apr. 9 1998  18:10 GMT
                                     Line Alarm Configuration
                                     Minor
Violation      Rate      Alarm Time  Clear      Rate      Alarm Time  Clear
1) Bpv         10E-7    10 min     3 min     10E-3    30 sec     10 sec
```

```

2) Fs          .01% 10 min      3 min          .1% 30 sec      10 sec
3) Oof         .0001% 10 min     3 min          .01% 30 sec     10 sec
4) LOS         .0001% 10 min     3 min          .01% 30 sec     10 sec
5) Fer         .01% 10 min      3 min          .1% 200 sec     10 sec
6) CRC         .01% 10 min      3 min          .1% 200 sec     10 sec
7) Oom         .001% 10 min     3 min          .1% 30 sec      10 sec
8) Ais16       .0001% 10 min     3 min          .01% 30 sec     10 sec
    
```

This Command: `clrtrkalm 10.1`

Example 2

```
clrtrkalm 7 4
```

Description

Clear the minor alarm type 4 caused by dropped voice packets on trunk 7. Respond to the “Continue?” prompt with “y” (for yes) to clear and display the remaining alarms.

System Response

```

beta          TRM   YourID:1      IPX 32      9.1      Aug. 15 1997 15:15 MST

PLN  Type      Current Line Alarm Status      Other End
 7   E1/32     Clear - Line OK                 alpha.10
 9   T1/24     Clear - Line OK                 gamma.10
13   T1/24     Clear - Line OK                 alpha.14
15   T1/24     Clear - Line OK                 gamma.15
20   T3/3      Clear - ATM Missing             -
    
```

Last Command: `clrtrkalm 7 4`

Next Command:

Table 14-24 **clrtrkalm-Parameters**

Parameter	Description
trunk number	Specifies the trunk. Note that, for virtual trunks, no virtual trunk parameter is required—just <i>slot.port</i> . The format is either <i>slot</i> (for a single-trunk card) or <i>slot.port</i> .
failure type	Specifies the type of alarm to clear.

clrtrkerrs

Clears the statistical error counters at the node for the specified physical or virtual trunk. You should do this before you begin any monitoring session and periodically thereafter to determine exactly when a trunk problem begins. Use **dsptrkerrs** to observe errors without clearing counters.

Full Name

Clear trunk errors

Syntax

```
clrtrkerrs <trunk_number | *>
```

Related Commands

dsptrkerrs, **prttrkerrs**

Attributes

Privilege	1-5
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
clrtrkerrs *
```

Description

Clear all trunk errors.

System Response

```
pubsbpx1      TN      SuperUser      BPX 15      9.1      Sep. 12 1997 19:37 PST
```

Total Errors

TRK	Code	Rx Cell	Out of	Loss of	Frame	HCS	Tx Cell	Cell	Cell
	Errors	Dropped	Frames	Signal	BitErrs	Errors	Dropped	Errors	Oofs
1.1	0	0	0	0	0	-	0	0	-
1.2	0	0	0	0	0	-	0	0	-

This Command: clrtrkerrs *

Clears errors on all trunks. Continue (y/n)?

Table 14-25 **clrtrkerrs-Parameters**

Parameter	Description
trunk number	Specifies the trunk counter to clear.

clrtrkstats

Clears the node counters used for the Display Trunk Statistics. Counters are cleared for a physical or virtual trunk. These counters should be cleared before beginning any monitoring session. This is similar to the **clrtrkerrs** command for errors. This command prompts the user with a “OK to Clear?” message before actually clearing the counters. Use **dsprkstats** to observe the trunk statistics. See the **dsprkstats** command for a description of the counters cleared by the **clrtrkstats** command.

Full Name

Clear trunk statistics

Syntax

clrtrkstats <trunk number>

Related Commands

dsprkstats

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	BPX, IGX
Lock	Yes

Example 1

```
clrtrkstats
```

Description

Clear the statistics on trunk 3.

Table 14-26 **clrtrkstats–Parameters**

Parameter	Description
trunk number	Specifies the trunk. Note that, for virtual trunks, no virtual trunk parameter is required—just slot.port. The format is either slot (for a single-trunk card) or slot.port.

cnfbus

Selects the active System Bus. It should only be necessary to use this command when a problem is suspected with the currently active System Bus. As a safeguard against bus failure, each node is equipped with redundant System Buses, Bus A and Bus B. Either bus can be configured as the active bus and the remaining bus is reserved as standby. Use the **dspbuses** command to display the current bus configuration when configuring the buses with the **cnfbus** command.

Full Name

Configure active bus

Syntax

cnfbus <a/b/t/1>

Related Commands

dspbuses

Attributes

Privilege	1-3
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	

Example 1

```
cnfbus t
```

Description

Configure the system bus to toggle.

System Response

```
pubsigx1      TN      SuperUser      IGX 32      9.1      Sep. 12 1997 19:42 GMT
```

Bus Info

```
Bus Bandwidth usage in Fastpackets/second (Snapshot)
```

```
Allocated = 20000      ( 2%)
```

```
Available = 1148000   (98%)
```

```
-----  
Bus A: Standby - OK  
Bus B: Active - OK
```

```
Last Command: cnfbus t
```

```
Next Command:
```

Table 14-27 cnfbus-Parameters

Parameter	Description
a	Select Bus A as the active bus.
b	Select Bus B as the active bus.
t	Toggles between buses. It changes the standby bus to the active bus and the active bus to the standby bus.
l	Toggles between buses and lanes. It changes the standby bus to the active bus and the standby lane to the active lane and the active bus to the standby bus and the active lane to the standby lane.

cnflnalm

Sets the trunk and line alarm values for failures that are statistical in nature. Statistical alarms are declared by the switch software when a cards supporting these trunks or lines report too many errors. The switch declares an alarm if the detected error rate equals the **cnflnalm** parameter *error rate* for the period of time designated by the *alarm time* parameter. Error rates that exceed the specified error rate cause an alarm in a proportionately shorter period of time. An alarm is cleared when the error rate remains below the rate specified by *error rate* for a period of time designated by the *clear time*.

You can configure the thresholds for alarms caused by the collection of statistics but not for the alarms caused by a network failure. For example, you can configure the threshold for an alarm caused by a collection of bipolar errors, but you cannot configure an alarm caused by a card failure.

Six parameters exist for each *failure type*—three for minor alarms and three for major alarms. When configuring any item for a minor or major alarm, you must enter a value. You can enter a new value or enter the current value.

Table 14-28 describes the parameters for **cnflnalm**. For each *failure type* listed in Table 14-28, the *alarm classes*, the possible *error rate* options, and default *alarm times* and *clear times* are listed in Table 14-29. Table 14-30 describes the *error rate* options listed in Table 14-29.

Full Name

Configure line alarms

Syntax

```
cnflnalm <fail_type> <alarm_class> <rate> <alarm_time> <clear_time>
```

Related Commands

clrcnalm, **clrtrkalm**, **dspcnerrrs**, **dsplnalmcnf**, **dsptrkerrrs**

Attributes

Privilege	1–3
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

```
cnflnalm
```

Description

Display current alarm types.

System Response

```
sw224          TN      SuperUser      IGX 16      9.0.n2      Aug. 27 1997 16:16 GMT
```

Line Alarm Types

1) Bpv	13) Tsdp	25) Rxbdbpd	37) Txbdacdsd
2) Fs	14) Ntsdp	26) Rxntspd	38) Txbdbcdsd
3) Oof	15) Pccpd	27) Rxhppd	39) Txcbrcdsd
4) Los	16) Bdapd	28) Atmhec	40) Txabrcdsd
5) Fer	17) Bdbpd	29) FSyncErr	41) Txvbrcdsd
6) CRC	18) Lcv	30) Rxspdm	42) TxGwFPdsd
7) Oom	19) Pcvl	31) CGWpktcdsd	43) RxGwCLdsd
8) Ais16	20) Pcvp	32) CGWcellcdsd	
9) Pkoof	21) Bcv	33) Txntscdsd	
10) Pkterr	22) Rxvdp	34) Txhpcdsd	
11) Badclk	23) Rxtspd	35) Txvcdsd	
12) Vpd	24) Rxbdapd	36) Txtscdsd	

Last Command: cnflnalm

Next Command:

Example 2

```
cnflnalm 27 1 4 4 3
```

Description

Set Alarm Type 27, the Minor alarm time threshold, to 4 minutes. In this example, the **cnflnalm** command is followed by the alarm type (27), the alarm minor or major (1 for minor, 2 for major), the current rate (which is the default of 0.001%, (which is a 4), the new value for Alarm Time of 4 minutes (which is a “4” entry), and the existing Alarm Clear time of “3.”

System Response

pubsigx1 TN SuperUser IGX 32 9.1 Aug. 20 1997 17:19 GMT

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
25) Rxbdapd	.001%	5 min	3 min	.1%	60 sec	10 sec
26) Rxbdbpd	.001%	5 min	3 min	.1%	60 sec	10 sec
27) Rxhppd	.001%	4 min	3 min	.1%	60 sec	10 sec
28) Atmhec	.1%	10 min	3 min	1%	120 sec	10 sec
29) FSyncErr	.01%	10 min	3 min	.1%	200 sec	10 sec
30) Rxspdm	.01%	4 min	2 min	.001%	30 sec	5 sec

Last Command: cnflnaln 27 1 4 4 3

Next Command:

Table 14-28 cnfInalm–Parameters

Parameter	Description
Failure type	<p>Specifies the failure type. The list that follows gives the number for each failure type. (Items with an asterisk pertain to ATM only.)</p> <ul style="list-style-type: none"> 1 Bpv—Bipolar violations 2 Fs —Frame slip 3 oof—Out of frame 4 Vpd -Voice packets dropped (TX) 5 Tspd—Time stamped packets dropped (TX) 6 Ntspd—Non-time stamped packets dropped 7 Pkterr—Packet error 8 Los—Loss of signal 9 Fer—Frame error 10 CRC—Cyclic Redundancy Check 11 Pkoof—Packet out of frame 12 Oom—Out of multi-frame 13 Ais16—Alarm information signal—E1/E3 Only 14 Bdapd—Bursty data A packets dropped 15 Bdbpd—Bursty data B packets dropped 16 Badclk—Bad clock 17 Pccpd—PCC packets dropped 18 * Lcv—Line code violations 19 * Pcv1—P-bit parity code violations 20 * Pcvp—C-bit parity code violations 21 * Bcv—PLCP BIP-8 code violations 22 * Rxvpd—Receive voice packets dropped 23 * Rxtspd—Receive time stamped packets dropped 24 * Rxntspd—Receive non-time stamped packets dropped 25 * Rxbdapd—Receive bursty data A packets dropped 26 * Rxbdbpd—Receive bursty data B packets dropped 27 * Rxhppd—Receive high priority packets dropped 28 * Atmhec—Cell header HEC errors 29 * Plcpoof—PLCP out of frame 30 * 30—Rxspdm: Receive spacer packets dropped
alarm class	<p>Specifies the class of alarm to be configured for the specified alarm type. Valid alarm classes are:</p> <ul style="list-style-type: none"> • Minor alarm • Major alarm
rates	<p>Specifies the error rate at which the error must occur before an alarm is declared. The choices for error rates vary depending on the <i>failure type</i> and the <i>alarm class</i>. The choices are called out as Error Rate Options. The default error rates are indicated. With the exception of a Vpd (voice packets dropped) failure, you enter the number corresponding to the error rate. For Vpd (voice packets dropped) failures, you enter a percentage for the dropped packet rate in the range 1%–10%. See Table 14-29 for failure type and Table 14-30 for error rate options.</p>

Parameter	Description
alarm time	Specifies the time that a condition must exceed a threshold before an alarm is declared. For minor alarms, the alarm time has a range of 3–10 minutes. For major alarms, the alarm time has a range of 10–250 seconds.
clear time	Specifies the time that the condition must exceed the selected threshold before the alarm is cleared. For minor alarms, the clear time has a range of 3–10 minutes. For major alarms, the clear time has a range of 10–250 seconds.

Table 14-29 Failure Type Parameters

Failure Type	Alarm Class	Error Rate Options *	Alarm Time	Clear Time
1-Bpv	1–minor	Option B Default = 4	10 Minutes	3 Minutes
	2–major	Default = 2	10 Seconds	10 Seconds
2-Fs	1–minor	Option A Default = 3	10 Minutes	3 Minutes
	2–major	Default = 2	10 Seconds	10 Seconds
3-Oof	1–minor	1: 1% 2: 0.1% 3: 0.01% 4: 0.001% 5: 0.0001% (Def.)	10 Minutes	3 Minutes
	2–major	1: 1% 2: 0.1% 3: 0.01% (Def.) 4: 0.001%	10 Seconds	10 Seconds
4- Vpd	1–minor	Any dropped packet	5 Minutes	3 Minutes
	2–major	rate from 1% to 10%	60 Seconds	10 Seconds
5- Tspd	1–minor	Option A Default = 3	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
6-Ntspd	1–minor	Option A Default = 3	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
7- Pkterr	1–minor	Any error count	10 Minutes	3 Minutes
	2–major	from 1–10,000	125 Seconds	10 Seconds
8-Los	1–minor	Option A Default = 5	10 Minutes	3 Minutes
	2–major	Default = 3	10 Seconds	10 Seconds
9- Fer	1–minor	Option A Default = 3	10 Minutes	3 Minutes
	2–major	Default = 2	200 Seconds	10 Seconds
10- CRC	1–minor	Option A Default = 3	10 Minutes	3 Minutes
	2–major	Default = 2	200 Seconds	10 Seconds
11-Pkoof	1–minor	Option A Default = 3	10 Minutes	3 Minutes
	2–major	Default = 2	200 Seconds	10 Seconds

Failure Type	Alarm Class	Error Rate Options *	Alarm Time	Clear Time
12- Oom	1–minor	Option A Default = 4	10 Minutes	3 Minutes
	2–major	Default = 2	10 Seconds	10 Seconds
13- Ais16	1–minor	Option A Default = 5	10 Minutes	3 Minutes
	2–major	Default = 3	10 Seconds	10 Seconds
14–Bdapd	1–minor	Option A Default = 4	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
15- Bdbpd	1–minor	Option A Default = 4	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
16–Badclk	1–minor	Option A Default = 2	10 Minutes	3 Minutes
	2–major	Default = 1	50 Seconds	10 Seconds
17–Pccpd	1–minor	Option A Default = 4	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
18–Lcv	1–minor	Option B Default = 3	10 Minutes	3 Minutes
	2–major	Default = 1	10 Seconds	10 Seconds
19–Pcv1	1–minor	Option B Default = 3	10 Minutes	3 Minutes
	2–major	Default = 1	10 Seconds	10 Seconds
20–Pcvp	1–minor	Option B Default = 3	10 Minutes	3 Minutes
	2–major	Default = 1	10 Seconds	10 Seconds
21–Bcv	1–minor	Option B Default = 3	10 Minutes	3 Minutes
	2–major	Default = 1	10 Seconds	10 Seconds
22–Rxvpd	1–minor	1–10% Default = 1%	5 Minutes	3 Minutes
	2–major	1–10% Default = 4%	60 Seconds	10 Seconds
23–Rxtspd	1–minor	Option A Default = 3	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
24–Rxbdapd	1–minor	Option A Default = 3	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
25–Rxbdbpd	1–minor	Option A Default = 4	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
26–Rxntspd	1–minor	Option A Default = 4	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds
27–Rxhppd	1–minor	Option A Default = 4	5 Minutes	3 Minutes
	2–major	Default = 2	60 Seconds	10 Seconds

Failure Type	Alarm Class	Error Rate Options *	Alarm Time	Clear Time
28-Atmhec	1-minor	Option A Default = 4	10 Minute	3 Minutes
	2-major	Default = 2	120 Seconds	10 Seconds
29-Plcpoof	1-minor	Option A Default = 4	10 Minutes	3 Minutes
	2-major	Default = 2	200 Seconds	10 Seconds
30-Rxspdm	1-minor	Option A Default = 4	4 Minutes	2 Minutes
	2-major	Default = 2	10 Seconds	5 Seconds

Table 14-30 Parameters for Error Rate Options

Error Rate Options						
Option	Alarm Class	Error Rate				
A	1 - minor	1 - 1%	2 -.1%	3 -.01%	4 -.001%	5 -.0001%
	2 - major	1 - 1%	2 -.1%	3 -.01%		
B	1 - minor	1 - 10E-4	2 - 10E-5	3 - 10E-6	4 - 10E-7	5 - 10E-8
	2 - major	1 - 10E-2	2 - 10E-3	3 - 10E-4	4 - 10E-5	5 - 10E-6

cnfslotalm

Configures the alarm parameters for the various card types. Upon command entry, the system displays a screen with a choice of 8 card-alarm types. It then displays “Enter Type” and waits for a number in the range 1–12. Upon entry of the alarm type, the system displays the error rates of the selected type.

Full Name

Configure slot alarm parameters

Syntax

cnfslotalm <fail_type> <alarm_class> <rate> <alarm_time> <clear_time>

Related Commands

dpslotalms

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	BPX
Lock	Yes

Example 1

```
cnfslotalm 10
```

Description

Configure the alarm parameters.

System Response

```
pubsbpx1      TN      SuperUser      BPX 15      9.1 Sep. 12 1997 19:43 PST
```

```
Slot Alarm Types
```

- | | |
|-------------------------|---------------------|
| 1) Standby PRBS Errors | 11) Poll Clk Errors |
| 2) Rx Invalid Port Errs | 12) CK 192 Errors |
| 3) PollA Parity Errors | |
| 4) PollB Parity Errors | |
| 5) Bad Grant Errors | |
| 6) Tx Bip 16 Errors | |
| 7) Rx Bip 16 Errors | |
| 8) Bframe parity Errors | |
| 9) SIU phase Errors | |

10) Rx FIFO Sync Errors

This Command: cnfslotalm

Enter Type:

The screen display after selecting alarm type 10:

pubsbpx1 TN SuperUser BPX 15 9.1 Sep. 12 1997 19:47 PST

Slot Alarm Configuration

	Minor			Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
1) SPRBS	.1%	10 min	3 min	1%	100 sec	100 sec
2) InvP	.1%	10 min	3 min	1%	100 sec	100 sec
3) PollA	.1%	10 min	3 min	1%	100 sec	100 sec
4) PollB	.1%	10 min	3 min	1%	100 sec	100 sec
5) BGE	.1%	10 min	3 min	1%	100 sec	100 sec
6) TBip	.1%	10 min	3 min	1%	100 sec	100 sec
7) RBip	.1%	10 min	3 min	1%	100 sec	100 sec
8) Bfirm	.1%	10 min	3 min	1%	100 sec	100 sec
9) SIU	.1%	10 min	3 min	1%	100 sec	100 sec
10) RFifo	.1%	10 min	3 min	1%	100 sec	100 sec

Last Command: cnfslotalm 10

Next Command:

cnftrkalm

Configures trunk alarm reporting. When trunks are upped and added to the network, alarm reporting automatically is enabled. The **cnftrkalm** command lets you disable alarms on a trunk. Disabling alarms may be useful, for example, for trunks that are connected to the node but not yet in service or if the node is experiencing occasional bursts of errors but is still operational. (When the alarms are enabled, they cause an alarm output from the DTI Group Alarm Connector (if present) and an alarm indication on the StrataView Plus terminal.)

Full Name

Configure trunk alarms

Syntax

```
cnftrkalm <trunk number> <e | d>
```

Related Commands

dspalms, **dsprks**

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
cnftrkalm 14 d
```

Description

Disable trunk alarms on trunk 14, which has a major alarm. After using this command to disable the alarms, the only indication that the alarms have been disabled is to observe the **dspalms** screen while a trunk alarm exists. The **dspalms** screen displays the word “disabled” after “PLN Alarms.” Therefore, when you disable trunk alarms, be sure to note this action so you remember to enable alarms after the cause of the trunk failure has been corrected.

System Response

```
alpha          TRM   YourID:1      IPX 16    9.1    Aug. 16 1997 13:04 PST
From Type      Current Line Alarm Status      Other End
14   T1/24      Major - Tx NTS Packets Dropped  beta.13
```

Last Command: cnftrkalm 14 d

Next Command:

Example 2

cnftrkalm 14 e

Description

Enable the alarms after they have been disabled.

Table 14-31 cnftrkalm-Parameters

Parameter	Description
e d	Enable or disable trunk alarms.

dellp

Deletes an external, local, remote, or local-remote (tiered nets) loopback from the designated channel, set of channels, or port. After the loopback is deleted, any conditioning applied during the loopback process is removed and service is restored. Local loopbacks are added with the **addloclp** command, and remote loopbacks are added with the **addrmtlp** command. External loopbacks are added with the **addextlp** command. A local loop can be deleted only from the node that added it. However, a remote loop can be deleted from the node at either end of the connection. Local-remote loopbacks are added with the **addlocrmtlp** command. Note that with local-remote loopbacks, execution of **dellp** is mandatory after testing is complete, otherwise continuity errors will follow.

Full Name

Delete loopback from connections or a port

Syntax

```
dellp <channel(s)>
```

Related Commands

addextlp, addloclp, addlocrmtlp, addrmtlp

Attributes

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

Example 1

```
dellp 5.1.121
```

Description

Delete the loopback on channel 5.1.121. The connections screen appears with connection 5.1.121 highlighted. (The highlighting is not visible in the screen example, but the loop symbols indicate loopback.) The display prompts you to confirm deletion of the loopback. To confirm, enter “y.”

System Response

```

pubsipx1      TN      SuperUser      IPX 16      9.1.00      May  29 1997 19:16 PDT

Local         Remote      Remote
Channel       NodeName   Channel      State  Type      Compress  Code COS
5.1.121      )pubsipx1  8.33.133    Ok     atfr
5.1.122      pubsipx1   8.34.134    Ok     atfr
5.2.111      pubsipx1   8.45.155    Ok     atfr
5.2.112      pubsipx1   8.45.156    Ok     atfr
8.33.133     pubsipx1   (5.1.121    Ok     atfr
8.34.134     pubsipx1   5.1.122     Ok     atfr
8.45.155     pubsipx1   5.2.111     Ok     atfr
8.45.156     pubsipx1   5.2.112     Ok     atfr

```

This Command: dellp 5.1.121

Delete these loopbacks (y/n)?

Table 14-32 dellp-Parameters

Parameter	Description
channels	<p>Specifies the channel or set of channels whose loopback is to be deleted. The format for <i>channel</i> depends on the type of connection, as follows:</p> <p>Voice connection: <i>slot.channel</i> Data connection: <i>slot.port</i> Frame relay connection: <i>slot.port.DLCI</i> ATM connections: <i>slot.port.vpi.vci</i> Access device: <i>slot.port.connection_ID</i></p>

dncd

Downs (or deactivates) a card. When you down a card, it is no longer available as a node resource. You should down a card before you remove it from a card cage. Before it actually downs an active card, the node determines if a standby card is available. If no standby card is present, the node gives you an opportunity to abort the command. If a standby card of the same type is available and you execute **dncd**, the standby card is activated. If no standby card is available and you execute the command, a major alarm results. To activate a downed card, use the **upcd** command.

Note If you remove a card from a card cage without first executing **dncd**, no warning appears.

You cannot down a control card (NPC, NPM, or BCC). Use **switchcc** for control cards.

In release 9.1.x, when the Abit Notifications on LMI/ILMI Interface feature is enabled, after downing the trunk card, the master node will deroute or condition all the connections, or condition the connections due to path fail.

After downing the trunk, the master node will deroute or condition all the connections it owns on the trunk. The slave end will receive the A7 message to deroute the connections or condition the connections due to path fail.

Full Name

Down card

Syntax

dncd <slot number>

Related Commands

dspcds, **resetcd**, **upcd**

Attributes

Privilege	1-3
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
dncd 9
```

Description
Down card 9.

Table 14-33 **dncd-Parameters**

Parameter	Description
slot number	Specifies the slot number of the card to be downed.

dspalms

Displays major and minor alarms throughout the network and more specific alarms at the local node. The **dspalms** command displays the following information:

- The number of failed connections on the node.
- The number of sources failed.
- The number of major and minor circuit line alarms on the node.
- The number of major and minor trunk alarms on the node.
- The number of failed cards on the node.
- The number of missing cards on the node.
- The number of alarms on other nodes in the network.
- When the StrataView Plus terminal is at a junction (physically, or **vt**), the number of junction node alarms is displayed.
- The number of unreachable nodes in the network.
- The power supply and power monitor failures on the node.
- Bus failures (either “Failed” or “Needs Diagnostics”).
- FR/ATM Port Communication Failed (OAM Packet Threshold exceeded).
- FR/ATM NNI A-bit Alarms (connections with A bits=0).
- Slot alarms on IGX due to insufficient bus bandwidth allocation on a slot containing a UXM card.
- Any alarm on the ASM card if the node is a BPX.

Trunk alarms are differentiated between those trunks that are disabled and trunks that are not disabled. For more details on each type of alarm, use the “display” command associated with each failed item. Table 14-34 shows the display commands that shows error information.

Table 14-34 Commands That Display Error Information

Command	Description
dspcds	Displays cards in the node, with "F" for failures.
dspclns	Displays circuit lines.
dspcons	Displays connections.
dsplog	Displays events affecting the node.
dspnds	Displays unreachable nodes within a network.
dspnw	Displays the network topology and includes alarm status of each node in the network.
dsptrks	Displays trunks.
dspppwr	Displays power supply status and internal temperature.

Full Name

Display current node alarms

Syntax
dspalms

Related Commands

dspecds, dspclns, dspcons, dsplog, dspnw, dsptrks, dsppwr

Attributes

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

Example 1

dspalms

Description

See a summary of all alarms affecting the node.

System Response

```
swl81          TN      SuperUser      BPX 15      9.1 Oct. 2 1997 12:26 GMT
```

```
Alarm summary (Configured alarm slots: None)
Connections Failed:  None
Groups Failed:      None
TRK Alarms:         None
Line Alarms:        None
Cards Failed:       None
Slots Alarmed:      None
Missing Cards:      1
Remote Node Alarms: 2 Minors
```

```
Interface Shelf Alarms: None
ASM Alarms:           None
```

```
Last Command: dspalms
```

```
Next Command:
```

Example 2

`dspalms`

Description

The current alarms on a BPX.

System Response

```
sw53          TN      SuperUser      BPX 15      9.1      July 21 1997 15:18 GMT
```

```
Alarm summary (Configured alarm slots: None)
Connections Failed:      100
Groups Failed:          None
TRK Alarms:             None
Line Alarms:            None
Cards Failed:           None
Slots Alarmed:          None
Missing Cards:          None
Remote Node Alarms:     1 Unreachable, 5 Majors, 5 Minors

Interface Shelf Alarms:  2 Unreachables, 2 Minors
ASM Alarms:              None
```

```
Last Command: dspalms
```

```
Next Command:
```

```
SW
```

```
MAJOR ALARM
```

dspbob

Shows the current state of all inputs from user equipment to the node the state of all outputs from the node to the user equipment. The display is real-time and updated at a user-specified interval. The display refreshes at the designated interval until the Delete key is pressed or until it times out. See the **cnfict** description for information on configuring data interfaces. When used with Frame Relay T1/E1 applications, **dspbob** displays the message “This FRP does not support V.35 ports.”

Displaying Signal Status for Port Concentrator Ports

If an FRM-2 or FRP-2 card connects to a Port Concentrator Shelf (PCS), up to 44 ports can be specified with the *port* parameter. In this case, **dspbob** displays the signal status for ports on the PCS. The PCS relays any changes in signal states to the FRM-2 or FRP-2, so a slight delay occurs when signals are updated.

When used for PCS ports, **dspbob** has an optional parameter of measuring port clock speed. Selection of this parameter temporarily interrupts all traffic on the logical port. The events that take place upon input of this parameter are:

- 1 The port is disabled.
- 2 Two invalid frames are timed as they go out the port.
- 3 The port is reactivated.

Full Name

Display breakout box

Syntax

```
dspbob <port> [interval] [(measure clock speed) y | n ]
```

Related Commands

cnfict, dspcon, dspict

Attributes

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

Example 1

```
dspbob 5.1
```


Description

See the breakout box display for channel 5.1.

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 11:29 PST
```

```
Port:          5.1
Interface:     V35   DCE
Clocking:      Normal      (255999 Baud)
```

Inputs from User Equipment						Outputs to User Equipment					
Lead	Pin	State	Lead	Pin	State	Lead	Pin	State	Lead	Pin	State
RTS	C	Off				CTS	D	On			
DTR	H	Off				DSR	E	On			
TxD	P/S	Idle				DCD	F	Off			
TT	U/W	Unused				RI	J	Off			
						TM	K	Off			
						RxD	R/T	Idle			
						RxC	V/X	Active			
						TxC	Y/a	Active			

This Command: dspbob 5.1

Hit DEL key to quit:

Example 2

```
dspbob 9.1
```

Description

See the breakout box display for frame relay connections.

System Response

```

alpha          TRM  YourID:1          IPX 16    9.1    Aug. 23 1997 11:29 PST

Port:          9.1
Interface:     FRI-V35  DTE
Clocking:     Normal

          Inputs from User Equipment          Outputs to User Equipment
Lead Pin State  Lead Pin State  Lead Pin State  Lead Pin State
CTS  D  Off      CTS  D  Off      RTS  C  On
DSR  E  Off      DSR  E  Off      DTR  H  On
DCD  F  Off      DCD  F  Off      LT   L  Off
(TM) n  Off      (RLB) N  Off
    
```

This Command: dspbob 9.1

Hit DEL key to quit:

Table 14-35 dspbob-Parameters

Parameter	Description
slot	Specifies the slot number of the card containing the port whose input and output pins are to be displayed.
port	Specifies the data port or frame relay port whose input and output pins are to be displayed.

Table 14-36 dspbob-Optional Parameters

Parameter	Description
interval	Specifies the time in seconds, between updates of the breakout box display. The range is from 1 to 60 seconds. If no interval is specified, the display is updated at five second intervals. Do not use an interval of "1" second in a busy network.
measure clock speed	For Port Concentrator Shelf (PCS) only, directs the system to measure the clock speed. If a Port Concentrator port is selected, the last measured clock speed is displayed on the Clocking line. When Measure Clock Speed is entered as an optional parameter, the clock is measured first, and the results are displayed. Clock speed measurement for PCS ports is described in the <i>Cisco WAN Switching System Overview</i> information for the PCS.

dspbusbw

Displays the amount of bandwidth allocated on the Cell Bus on an IGX node. By default, the system will allocate enough bus bandwidth for one OC-3 when the first line is upped using the **upln** command. If there is not enough allocated Cell Bus bandwidth, the line will not be upped. Cell Bus bandwidth must be allocated before adding connections on the UXM card.

Full Name

Display Cell Bus bandwidth allocated for UXM card.

Syntax

dspbusbw <slot> [u]

Related Commands

cnfbusbw

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	IGX (with UXM)
Lock	Yes

Example

```
dspbusbw 6
```

Description

Display the amount of bandwidth allocated on the Cell Bus on the UXM card in slot 6 of the IGX node.

System Response

```
Get updated bandwidth info from card (Y/N)? n
swl99          TN    StrataCom    IGX 16    9.1.w9    Apr. 9 1998  17:52 GMT
1\NBus Bandwidth Usage for UXM card in slot 6    Last Updated on 04/07/98 12:03:0
0
          FPkts/sec    Cells/sec    UBUs
Minimum Req'd Bandwidth:          0          0          0
Average Used Bandwidth:          0          0          0
Peak    Used Bandwidth:          0          0          0
Maximum Port Bandwidth:          -          10866        3
```

```

Allocated   Bandwidth:                8
            (Cell Only):              -    32000
            (Cell+Fpkt):              16000   24000
            (Fpkts / 2 + Cells)   <=    32000

Reserved   Bandwidth:                -    4000    1

Last Command: dspbusbw 6

Next Command: dspbusbw 6

Get updated bandwidth info from card (Y/N)? y

sw199      TN      StrataCom      IGX 16      9.1.w9      Apr. 9 1998  17:53 GMT

1\NBus Bandwidth Usage for UXM card in slot 6  Last Updated on 04/09/98 17:53:2
2
            FPkts/sec    Cells/sec    UBUs
Minimum Req'd Bandwidth:      0          0          0
Average Used Bandwidth:      0          0          0
Peak Used Bandwidth:         0          0          0
Maximum Port Bandwidth:      -          10866     3

Allocated   Bandwidth:                8
            (Cell Only):              -    32000
            (Cell+Fpkt):              16000   24000
            (Fpkts / 2 + Cells)   <=    32000

Reserved   Bandwidth:                -    4000    1

Last Command: dspbusbw 6
    
```

Table 14-37 dspbusbw-Parameters

Parameter	Description
slot	Specifies the slot number of the card containing the universal bus bandwidth information to display.

Table 14-38 dspbusbw-Optional Parameters

Parameter	Description
u	Specifies that the card should update the information with the latest information calculated in firmware. If not provided, the system will prompt you.

Table 14-39 dspbusbw-Screen Information

Display	Description
Minimum Required Bandwidth	Minimum bandwidth in FastPackets per second and cells per second required for all connections currently configured on this card. This is calculated by UXM firmware as connections are added.

Display	Description
Maximum Port Bandwidth	Total bandwidth of all active trunks/ports on this card in FastPackets per second, cells per second and UBUs.
Average Bandwidth and Peak Used Bandwidth	Statistics counters maintained by UXM firmware. These statistic counters display FastPackets per second, cells per second and UBUs. Use this information when calculating the amount of Bus Bandwidth to be allocated. These counters will be cleared when the UXM card is reset.
Last Updated time	Shows the time when the counters were last updated. This will be the current time if you answered yes to the <code>Get updated bandwidth info from card (Y/N)?</code> prompt or entered the command with the <code>u</code> parameter.
Allocated Bandwidth	The bandwidth allocated for this card using the <code>cnfbusbw</code> command. Refer to the <i>Cisco WAN Switching SuperUser Commands</i> manual for more information. Allocated bandwidth is specified in FastPackets per second, cells per second and converted to UBU units by the system.

dspbuses

Displays the status of the System Buses on an IPX or IGX node. As a safeguard against bus failure, each node is equipped with redundant System Buses: Bus A and Bus B. Either bus can be configured as the active bus with the other bus as standby. The **cnfbus** command is used to switch the active bus. Each System Bus contains the following buses: Control Bus, Time Division Multiplex (TDM) bus, clock bus and power bus. In addition to showing which System Bus is active and which is standby, the **dspbuses** command also shows which sub-bus needs diagnostics or has failed. Bus status is displayed at the bottom of the screen. Table 14-40 shows the possible status displays and their meaning.

Table 14-40 Possible Bus Status Displays

Status	Description
OK	Bus operation satisfactory
Failed TDM	A failed TDM Bus
Failed CNTL	A failed Control Bus
Needs Diagnostics TDM	The TDM bus needs diagnostics
Needs Diagnostics CNTL	The Control Bus needs diagnostics

The remaining MUXBUS or CELLBUS bandwidth available to assign to cards and circuits is displayed. This is primarily used when configuring the AIT card on the IPX node or BTM card on the IGX node. The user can assign MUXBUS or CELLBUS bandwidth for the IPX or IGX node, respectively. Available bandwidth falls into two categories, namely, *dedicated* and *pooled*. Dedicated bandwidth is reserved by the system for specific purposes, such as Statistical Reserve for PCC traffic. Pooled bandwidth can be assigned to any use but primarily is used for an ATM trunk.

MUXBUS or CELLBUS bandwidth is assigned in quantities of “switches,” “slices,” and “circuits” and the available bandwidth is displayed in three rows accordingly. A single DS0 circuit occupies 333 packets/second of MUXBUS or CELLBUS bandwidth, a “slice” of bandwidth is equivalent to three DS0 circuits for a total of 1000 packets/second. And a switch is 8 slices for a total of 8000 packets/second of bus bandwidth. In a newly installed node with no cards and no circuits installed, the total bus bandwidth that is available to be assigned is listed in the right column of the following table, which is the sum of the dedicated and pooled bandwidth. As cards and circuits are added to the node, the available bandwidth decreases accordingly.

Table 14-41 Bandwidth Units and Capacity

Unit of BW	Quantity	MUXBUS/CELLBUS Capacity
switch	8 slices or 8000 packets/sec.	20
slice	3 DS0's or 1000 packets/sec.	160
DS0	333 packets/sec.	480

Full Name

Display status of buses

Syntax

dspbuses

Related Commands

cnfbus

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	IPX, IGX (non-UXM)
Lock	No

Example 1

dspbuses

Description

Display status and bandwidth available. The status of Bus A and Bus B is displayed. In this example, both buses are OK and B is the active Control bus (normal operation is for bus A to be the active bus).

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 16 1997 13:34 PST
```

Bus Info

Available MUXBUS bandwidth (snapshot)

Dedicated	Pooled	Units
-----	-----	-----
0	13	8000 pkts/sec
5	104	1000 pkts/sec
22	312	ds0 circuits

Bus Status

```
-----
Bus A: Standby - OK
Bus B: Active - OK
```

Last Command: dspbuses

Next Command:

dspcnerrs

Displays the accumulated error count since the last time errors were reset. Table 14-42 lists the types of circuit line errors. The **clrlnerrs** command clears the error counters for circuit lines.

Note The **dsplnerrs** and **dspcnerrs** commands are the same.

Table 14-42 Errors Displayed by the dsplnerrs Command

Type	Explanation
Bipolar errors	Number of times that two consecutive pulses had the same polarity (applies to AMI coding only).
Frame slips	Number of times a frame was discarded to re-establish synchronization.
Out of frames	Number of times a loss of-frame synchronism was detected on this circuit line.
Loss of signal	Number of times the signal level at the circuit line input went below the minimum acceptable level.
Frame bit errors	Number of times the frame bit failed to alternate (frame error).
CRC errors	Number of times the generated CRC character did not match the received CRC character (applies only if CRC checking is enabled).
Out of MFrames	Number of times a multiframe synch error was detected (E1 lines only).
AIS - 16	Number of times the Alarm Information Signal (Blue signal) was received.

Full Name

Display circuit line errors

Syntax

dspcnerrs [slot | slot.line]

Related Commands

clrlnerrs, **prtlnerrs**

Attributes

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

Example 1

`dspclnerrs`

Description

Display a summary of all circuit line errors.

System Response

```
swl51          TN      SuperUser      IGX 16      9.1      June 20 1997 12:45 GMT
```

Total Errors

CLN	Code Errors	Frame Slips	Out of Frames	Loss of Signal	Frame BitErrs	CRC Errors	Out of MFrames	AIS-16
9	0	-	0	0	-	0	-	-
5.1	0	-	0	0	-	0	-	-
12	0	0	0	0	-	0	-	-
5.2	0	-	0	0	-	0	-	-

Last Command: `dspclnerrs`

Next Command:

Example 2

`dspclnerrs 5.1`

Description

Display the circuit line errors for line 5.1 on the UFM card in slot 5.

System Response

```

sw151          TN      SuperUser      IGX 16      9.1          June 20 1997 12:38 GMT

Circuit Line 5.1 Status:Major - Out of Frm (RED)          Clrd: 06/20/96 12:08:38
Type          Count ETS   Status   Type          Count ETS   Status
Bipolar Err   0     0        Loss of Sig (RED)  0     -
Frame Slips   -     -        AIS (BLU)         0     -
Out of Frms   0     0        Out of Frms (RED)  2     -
Loss of Sig   0     0        Frm Err Rate(RED) -     -
Frame BitErrs -     -        AIS-16 (RED)     -     -
CRC Err       0     0        Rmt Oof (YEL)    0     -
AIS-16        -     -        Out of MFms (RED) -     -
Out of MFms   -     -        Rmt Oom (YEL)    -     -
                                   Local CGA (RED)   -     -
                                   Remote CGA (YEL) -     -
    
```

Last Command: dspclnerrs 5.1

Next Command:

SW

MAJOR ALAR

Table 14-43 dspclnerrs—Optional Parameters

Parameter	Description
slot or slot.line	For most circuit lines, the slot number is the line number. To use this optional parameter on a UFM, enter one of the line numbers. With no optional parameter specification, a summary screen for all line errors appears.

dspeventq

Display information about any configured event queues from the *fail event handler*.

Full Name

Display event queue

Syntax

dspeventq

Related Commands

clreventq

Attributes

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

Example 1

dspeventq

Description

Display the contents of the fail event handler on the current node.

System Response

swstorm TN SuperUser BPX 15 9.1 Aug. 24 1997 11:00 GMT

QUEUE		LENGTH		THROTTLING
NUM NAMES	MAX	HIGH	CURRENT	POINT
1 Fail_Xid		4	1	14000
2 Fail_Q		4	0	

Last Command: dspeventq

Next Command:

dspfrcbob

Displays the current state of the signals on the FRM-2 or FRP-2 physical port. The display is real-time and updated according to the *interval* parameter. The display refreshes at a user-specified interval until either the Delete key is pressed or until a timeout occurs.

This command does not show inputs from the user equipment. It shows inputs from the Port Concentrator module to the FRI-2.

For the Inputs from the User Equipment, the display shows the signals as either On, Off, Active, or Inactive. For the Outputs to User Equipment, the display shows the signals as either On, Off, Active, or Inactive. X.21 State Names and Leads for DTC and DCE interfaces are also displayed as ON or OFF.

Full Name

Display FRC/FRM breakout box

Syntax

dspfrcbob <slot.pot> <interval>

Related Commands

dspbob, **dspfrcport**

Attributes

Privilege	1-3
Jobs	No
Log	No
Node	IPX, IGX
Lock	Yes

Example 1

```
dspfrcbob 5.2
```

Description

Display the signals states for port 2 in slot 5.

System Response

bootzilla LAN SuperUser IPX 32 9.1 Aug. 4 1997 15:09 GMT

Physical Port: 5.2
 Interface: FTI-X21 DCE
 Clocking: Normal (512224 bps)

Inputs from User Equipment						Outputs to User Equipment					
Lead	Pin	State	Lead	Pin	State	Lead	Pin	State	Lead	Pin	State
C	3/10	On				I	5/12	On			
T	2/9	Active				R	4/11	Active			

X.21 State Name	DTE Lead	T C	DCE Lead	R I
1 Ready		1 OFF		1 OFF
13 S Send Data		D ON		1 OFF
13 R Receive Data		1 OFF		D ON
13 Data Transfer		D ON		D ON

This Command: dspfrcbob 6.2 1

Hit DEL key to quit:

Table 14-44 dspfrcbob-Parameters

Parameter	Description
slot.pot	Specifies the slot and port of an FRM-2/FRC-2 physical port. Port range is 1-4.
interval	Specifies the screen update interval in seconds. The default is 5 seconds.

dsplog

Displays the event log for a node. Events affecting the node are displayed in chronological order with the most recent events at the top of the log. Events from the FastPAD are integrated into the log. The display includes a description of the event, the date and time of the event, and the alarm class of the event. A “Continue?” prompt is displayed if more than one screen is required to display all the log entries. Events generating alarms are marked “Major” or “Minor”, and events clearing alarms are marked “Clear.”

Full Name

Display event log

Syntax

dsplog

Related Commands

cllogs

Attributes

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

Example 1

```
dsplog
```

Description

Display the event log for the node.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 13:35 PST

Most recent log entries (most recent at top)

Class	Description	Date	Time
Info	User YourID logged in (Local)	03/16/95	13:31:41
Info	Standby NPC 2 Update Completed	03/16/95	13:31:14
Major	PLN 14 Tx NTS Packets Dropped	03/16/95	13:27:50
Info	CDP 7 Inserted	03/16/95	13:27:41
Info	NPC 2 Restarted due to a NPC Switchover	03/16/95	13:27:39
Info	Clock switch to oscillator of gamma via PLN 10	03/16/95	13:27:31
Info	CDP 7 Removed	03/16/95	13:27:31
Info	NPC 2 Removed - Activated NPC 1	03/16/95	13:27:31
Clear	PLN 14 Line OK	03/16/95	13:27:30
Major	PLN 14 Tx NTS Packets Dropped	03/16/95	13:27:05
Clear	PLN 14 Line OK	03/16/95	13:26:55

This Command: dsplog

Continue?

dsplnalmcnf

Displays alarm configuration by alarm type. Each alarm type includes:

- The minor alarm threshold
- The minor alarm time
- The minor alarm clear time
- The major alarm threshold
- The major alarm time
- The major alarm clear time

The alarm threshold, alarm time, and alarm are set in the **cnfInalm** command. See the **cnfInalm** command for descriptions of these parameters.

Full Name

Display line alarm configuration

Syntax

dsplnalmcnf

Related Commands

cnfInalm, **dsplnerrrs**, **dsptrkerrrs**

Attributes

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

Example 1

```
dsplnalmcnf
```

Description

View the line alarm threshold configured for a node.

System Responses

alpha TRM YourID:1 IPX 16 9.1 Aug. 23 1997 10:51 PST

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
1) Bpv	10E-7	10 min	3 min	10E-3	10 sec	10 sec
2) Fs	.01%	10 min	3 min	.1%	10 sec	10 sec
3) Oof	.0001%	10 min	3 min	.01%	10 sec	10 sec
4) Vpd	2%	5 min	3 min	5%	60 sec	10 sec
5) Tsdp	.01%	5 min	3 min	.1%	60 sec	10 sec
6) Ntsdp	.01%	5 min	3 min	.1%	60 sec	10 sec
7) Pkterr	.01%	10 min	3 min	.1%	125 sec	10 sec
8) Los	.0001%	10 min	3 min	.01%	10 sec	10 sec

This Command: dsplnalmcnf

Continue?

alpha TRM YourID:1 IPX 16 9.1 Aug. 23 1997 10:51 PST

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
9) Fer	.01%	10 min	3 min	.1%	200 sec	10 sec
10) CRC	.01%	10 min	3 min	.1%	200 sec	10 sec
11) Pkoof	.01%	10 min	3 min	.1%	200 sec	10 sec
12) Oom	.001%	10 min	3 min	.1%	10 sec	10 sec
13) Aisl6	.0001%	10 min	3 min	.01%	10 sec	10 sec
14) Bdapd	.001%	5 min	3 min	.1%	60 sec	10 sec
15) Bdbpd	.001%	5 min	3 min	.1%	60 sec	10 sec
16) Badclk	.1%	10 min	3 min	1%	50 sec	10 sec

This Command: dsplnalmcnf

Continue?

alpha TRM YourID:1 IPX 16 9.1 Aug. 23 1997 10:52 PST

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
17) Pccpd	.001%	5 min	3 min	.1%	60 sec	10 sec
18) Lcv	10E-6	10 min	3 min	10E-2	10 sec	10 sec
19) Pcvl	10E-6	10 min	3 min	10E-2	10 sec	10 sec
20) Pcvp	10E-6	10 min	3 min	10E-2	10 sec	10 sec
21) Bcv	10E-6	10 min	3 min	10E-2	10 sec	10 sec
22) Rxvpd	1%	5 min	3 min	4%	60 sec	10 sec
23) Rxtspd	.01%	5 min	3 min	.1%	60 sec	10 sec
24) Rxntspd	.01%	5 min	3 min	.1%	60 sec	10 sec

This Command: dsplnalmcnf

Continue?

alpha TRM YourID:1 IPX 16 9.1 Aug. 23 1997 10:52 PST

Line Alarm Configuration

Minor				Major		
Violation	Rate	Alarm Time	Clear	Rate	Alarm Time	Clear
25) Rxbdapd	.001%	5 min	3 min	.1%	60 sec	10 sec
26) Rxbdbpd	.001%	5 min	3 min	.1%	60 sec	10 sec
27) Rxhppd	.001%	4 min	3 min	.1%	60 sec	10 sec
28) Atmhcc	.1%	10 min	3 min	1%	120 sec	10 sec
29) Plcpoof	.01%	10 min	3 min	.1%	200 sec	10 sec
30) Rxspdm	.01%	4 min	2 min	.001%	10 sec	5 sec

Last Command: dsplnalmcnf

Next Command:

dsplnerrs

Displays the accumulated error count since the last time errors were reset. Table 14-45 lists the error types displayed. The **clrlnerrs** command clears the error counters for circuit lines by resetting all error counts to 0.

Table 14-45 Line Error Types

Type	Explanation
Bipolar errors	Number of times two consecutive pulses have the same polarity (occurs only when the line uses AMI coding).
Frame slips	Number of times a frame is discarded to re-establish synchronization.
Out of frames	Number of times a loss of-frame synchronism is detected on this line.
Loss of signal	Number of times the signal level at the circuit line input went below the minimum acceptable level.
Frame bit errors	Number of times the frame bit failed to alternate (frame error).
CRC errors	Number of times the generated CRC character did not match the received CRC character (applies only if CRC checking is enabled).
Out of MFrames	Number of times a multiframe synch error was detected (E1 lines only).
AIS - 16	Number of times the Alarm Information Signal (Blue signal) was received.

Full Name

Display line errors

Syntax

dsplnerrs [line_number]

Related Commands

clrlnerrs, prtlnerrs

Attributes

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

Example 1`dsplnerrs`**Description**

Display the circuit line errors for all lines.

Table 14-46 dsplnerrs—Optional Parameters

Parameter	Description
line number	Specifies the circuit for the error count display. Otherwise, a summary screen for all lines appears.

dspphyslnerrs

Displays the accumulated line error counts, by failure type, for the specified trunk(s). If no trunk number is entered, a one-line summary of errors for all trunks at the local node is displayed. If a specific trunk number is entered with the command, a detailed analysis, including error threshold (ETH), is displayed. Disabled trunks have their trunk number displayed in dim, reverse video on the screen. The **clrphyslnerrs** command resets all error counts to 0. Table 14-58 contains a brief description of each error.

Table 14-47 Description of the Errors in the dspphyslnerrs Display

Line Type	Error	Explanation
All except ATM	Bipolar errors	Number of times two consecutive pulses have the same polarity (AMI coding only).
	Frame slips	Number of times a frame is discarded to re-establish synchronization.
	Out of frames	Number of times a loss of-frame synchronism is detected on this circuit line.
	Loss of signal	Number of times the signal level at the circuit line input went below the minimum acceptable level.
	Frame bit errors	Number of times the frame bit failed to alternate (frame error).
	CRC errors	Number of times the generated CRC character did not match the received CRC character (applies only if CRC checking is enabled).
	Out of MFrames	Number of times a multiframe synch error was detected (E1 lines only).
	AIS - 16	Number of times the Alarm Information Signal (Blue signal) was received.
Only ATM	Out of Frames	Number of times a momentary loss of-DS3 frame alignment was detected.
	Loss of sync (XX)	Number of times a loss of-DS3 frame alignment lasting more than XX seconds was detected.
	Packet Error	Number of CRC errors for a packet address.
	Line Code Errors	Number of B3ZS code errors detected.
	P-bit Parity Errors	Number of parity errors for the DS3 parity bit (P-bit) sequence.
	C-bit Parity Errors	Number of parity errors for the DS3 control bit (C-bit) sequence.
	Comm Fails	Number of BCC failed to communicate to the other node.
Only ATM	Loss of signal	Number of times the signal level at the trunk line input went below the minimum acceptable level.
	AIS (BLU)	Number of times the Alarm Information Signal (Blue signal) was received.
	Out of MFrames	Number of times a loss of-frame synchronism in the DS3 multiframe alignment was detected.
	Remote Oof	Number of times the DS3 remote alarm (indicating remote end was out of frame alignment) was received.

Full Name

Display physical line errors

Syntax

dspphyslnerrs [slot | slot.port]

or

dspphyslnerrs <slot.port> (for virtual physical lines)

Related Commands

clrphyslnerrs, **prtrphyslnerrs**

Attributes

Privilege 1-6

Jobs No

Log No

Node IGX

Lock No

Example 1

```
dspphyslnerrs
```

Description

Display a summary of all physical line errors at the local IGX node.

System Response

```
sw228            TN    SuperUser            IGX 16    9.1.w2    Aug. 27 1997 17:56 PST
```

```
Total Errors
```

PHYSLN	Code	Out of	Loss of	Frame	HCS
	Errors	Frames	Signal	BitErrs	Errors
6.2	0	0	0	0	0
6.3	0	0	0	0	0
8.1	0	0	0	0	0
10.1	0	0	0	0	0
11.3	-	0	0	0	0
11.4	-	0	0	0	0
11.5	-	0	0	0	0
11.6	-	0	0	0	0

```
Last Command: dspphyslnerrs
```

Example 2

dspphyslerrs 11.3

Description

Display a detailed description of the errors for physical line 11.3 (an OC3 trunk).

System Response

```
sw228          TN      SuperUser      IGX 16      9.1.w2      Aug. 27 1997 17:59 PST

PHYSLN 11.3      Status:Clear - OK

                                           Clrd: 08/27/97 13:33:15
Type           Count ETS   Status   Type           Count ETS   Status
Out of Frms    0      0        -        Loss of Sig (RED)  0      -
Loss of Sig    0      0        -        AIS (BLU)         0      -
Frame BitErrs  0      0        -        Out of Frms (RED)  0      -
CRC Err        0      0        -        Frm Err Rate(RED)  0      -
                                           AIS-16 (RED)      0      -
                                           Rmt Oof (YEL)     0      -
                                           Loss of Cell       1      -
```

Last Command: dspphyslerrs 11.3

Example 3

dspphyslerrs 8.1

Description

Display a detailed description of the errors for physical line 8.1 (an E3/T3 trunk).

System Response

```

sw228          TN      SuperUser      IGX 16      9.1.w2      Aug. 27 1997 17:57 PST

PHYSLN 8.1      Status:Major - Loss of Sig (RED)

                                           Clrd: 08/27/97 11:04:30
Type          Count ETS   Status      Type          Count ETS   Status
Bipolar Err   0      0           Loss of Sig (RED)  5      -
Out of Frms   0      0           AIS (BLU)         0      -
Loss of Sig   0      0           Out of Frms (RED)  0      -
Frame BitErrs 0      0           Remote (YEL)      0      -
CRC Err       0      0           Loss of Cell      0      -
P-bit Parity Errs 0      0           Loss of Pointer   0      -
C-bit Parity Errs 0      0           PLCP Out of Frame 0      -

```

Last Command: dspphyslerrs 8.1

Example 4

dspphyslerrs 11.3

Description

Display a detailed description of the errors for physical line 11.3 (an E1 trunk).

System Response

```

sw228          TN      SuperUser      IGX 16      9.1.w2      Aug. 27 1997 17:59 PST

PHYSLN 11.3     Status:Clear - OK

                                           Clrd: 08/27/97 13:33:15
Type          Count ETS   Status      Type          Count ETS   Status
Out of Frms   0      0           Loss of Sig (RED)  0      -
Loss of Sig   0      0           AIS (BLU)         0      -
Frame BitErrs 0      0           Out of Frms (RED)  0      -
CRC Err       0      0           Frm Err Rate(RED)  0      -
                                           AIS-16 (RED)      0      -
                                           Rmt Oof (YEL)     0      -
                                           Loss of Cell      1      -

```

Last Command: dphyslerrs 11.3

Example 5

dspphyslnerrs 10.1

Description

Display a detailed description of the errors for physical line 10.1 (a T1 trunk).

System Response

```

sb-reef          TN      SuperUser      IGX 16      9.1.12      Aug. 27 1997 18:03 PDT

PHYSLN 10.1      Status:Clear - OK

                                           Clrd: 08/27/97 16:43:20
Type             Count ETS   Status   Type             Count ETS   Status
Bipolar Err      0     0       Status   Loss of Sig (RED) 0     -
Out of Frms      0     0       Status   AIS (BLU)         0     -
Loss of Sig      0     0       Status   Out of Frms (RED) 0     -
Frame BitErrs   0     0       Status   Rmt Oof (YEL)    0     -
CRC Err          0     0       Status   Loss of Cell      0     -
    
```

Last Command: dspphyslnerrs 10.1

Table 14-48 dspphyslnerrs-Parameters

Parameter	Description
physical line number	Specifies a physical line for the error display. The form of a specific physical line is <i>slot</i> for single-physical line cards or <i>slot.port</i> for multi-physical line cards.

dspphyslns

Displays a summary of the connection type and current alarm status for physical lines at the local IGX node. If no trunk number is entered, a one-line summary of errors for all trunks at the local node is displayed. If a specific slot number is entered with the command, a detailed analysis, including error threshold (ETH), is displayed. Disabled trunks have their trunk number displayed in dim, reverse video on the screen. The **clrphyslnerrs** command resets all error counts to 0. Table 14-58 contains a brief description of each error.

Table 14-49 Description of the Errors in the dspphyslnerrs Display

Line Type	Error	Explanation
All except ATM	Bipolar errors	Number of times two consecutive pulses have the same polarity (AMI coding only).
	Frame slips	Number of times a frame is discarded to re-establish synchronization.
	Out of frames	Number of times a loss of-frame synchronism is detected on this circuit line.
	Loss of signal	Number of times the signal level at the circuit line input went below the minimum acceptable level.
	Frame bit errors	Number of times the frame bit failed to alternate (frame error).
	CRC errors	Number of times the generated CRC character did not match the received CRC character (applies only if CRC checking is enabled).
	Out of MFrames	Number of times a multiframe synch error was detected (E1 lines only).
	AIS - 16	Number of times the Alarm Information Signal (Blue signal) was received.
Only ATM	Out of Frames	Number of times a momentary loss of-DS3 frame alignment was detected.
	Loss of sync (XX)	Number of times a loss of-DS3 frame alignment lasting more than XX seconds was detected.
	Packet Error	Number of CRC errors for a packet address.
	Line Code Errors	Number of B3ZS code errors detected.
	P-bit Parity Errors	Number of parity errors for the DS3 parity bit (P-bit) sequence.
	C-bit Parity Errors	Number of parity errors for the DS3 control bit (C-bit) sequence.
	Comm Fails	Number of BCC failed to communicate to the other node.
Only ATM	Loss of signal	Number of times the signal level at the trunk line input went below the minimum acceptable level.
	AIS (BLU)	Number of times the Alarm Information Signal (Blue signal) was received.
	Out of MFrames	Number of times a loss of-frame synchronism in the DS3 multiframe alignment was detected.
	Remote Oof	Number of times the DS3 remote alarm (indicating remote end was out of frame alignment) was received.

Full Name
Display physical lines

Syntax
dspphyslms [slot]

Related Commands
clrphyslnerrs, prtphyslnerrs

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	IGX
Lock	No

Example 1
dspphyslms

Description
Display a summary of the connection type and current alarm status for all the physical lines at the local IGX node.

System Response

```
sw228          TN      SuperUser      IGX 16      9.1.w2      Aug. 27 1997 17:52 PST

PHYSLN  Type  Current Line Alarm Status      TRK
  6.2    OC3  Major - Loss of Sig (RED)        6.2
  6.3    OC3  Clear - OK                        6.3
  8.1    T3   Clear - OK                        8.1
 10.1    E3   Clear - OK                       10.1
 11.3    E1/30 Clear - OK                       11.3
 11.4    E1/30 Major - Loss of Sig (RED) 11.4-6
 11.5    E1/30 Major - Loss of Sig (RED) 11.4-6
 11.6    E1/30 Major - Loss of Sig (RED) 11.4-6
```

Last Command: dspphyslms

Example 2
dspphyslms 11

Description

Display a detailed description of the type and current alarm status for the physical lines in slot 11 (an E1 IMA trunk).

System Response

```
sw228          TN      SuperUser      IGX 16      9.1.w2      Aug. 27 1997 17:53 PST

PHYSLN  Type  Current Line Alarm Status      TRK
11.3    E1/30  Clear - OK                        11.3
11.4    E1/30  Major - Loss of Sig (RED)        11.4-6
11.5    E1/30  Major - Loss of Sig (RED)        11.4-6
11.6    E1/30  Major - Loss of Sig (RED)        11.4-6
```

Last Command: dspphyslns 11

Table 14-50 dspphyslns– Optional Parameters

Parameter	Description
slot number	Specifies a particular slot to display.

dsppwr

The **dsppwr** command displays the current status of the power supplies and the temperature in the cabinet.

Full Name

Display power

Syntax

dsppwr

Related Commands

resetcd

Attributes

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

Example 1

```
dsppwr
```

Description

Display the power status and temperature inside the current IPX node.

Example 3

dsppwr

Description

Display the power status and temperature inside the current BPX node.

System Response

```
bootzilla TN SuperUser BPX 15 9.1 May 17 1997 11:06 GMT

      Power Status                               Cabinet Temperature

ASM Status: Active                               21           69

Power voltage A/B:      0 / 49 V

PSU  Ins Type Rev SerNum Failure
A    N  N/A N/A  N/A    N/A
B    Y  ??? 00  ..... None

      Fan Status

FAN  1    2    3
     0000 3300 3240 RPM

C 60 | | 140 F
e   | | 122 h
n 50 |--|
t   | | 104 e
i 40 | | 86  h
g   | | 68  e
r 30 | | 68  i
a 20 | | 68  t
d 20 | | 68  t
e   |--|
```

Last Command: dsppwr

Next Command:

dspslotalmcnf

Displays the slot alarm configuration for the BPX node.

Full Name

Display slot alarm configuration.

Syntax

dspslotalmcnf [slot]

Related Commands

dspslotalms

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX
Lock	No

Example 1

```
dspslotalmcnf 7
```

Description

Display the slot alarm configuration for the BPX.

System Response

Dl.jea TRM SuperUser BPX 15 9.1 Aug. 30 1997 12:04 GMT

Slot Alarm Configuration

Violation	Rate	Minor			Major		
		Alarm Time	Clear	Rate	Alarm Time	Clear	
1) SBus	.01%	10 min	3 min	.1%	10 sec	10 sec	
2) InvP	.01%	10 min	3 min	.1%	10 sec	10 sec	
3) PollA	.01%	10 min	3 min	.1%	10 sec	10 sec	
4) PollB	.01%	10 min	3 min	.1%	10 sec	10 sec	
5) BGE	.01%	10 min	3 min	.1%	10 sec	10 sec	
6) TBip	.01%	10 min	3 min	.1%	10 sec	10 sec	
7) RBip	.01%	10 min	3 min	.1%	10 sec	10 sec	
8) Bfrm	.01%	10 min	3 min	.1%	10 sec	10 sec	
9) SIU	.01%	10 min	3 min	.1%	10 sec	10 sec	

Last Command: dspslotalmcnf 7

Next Command:

Table 14-51 dspslotstatcnf—Optional Parameters

Parameter	Description
slot number	Specifies the slot number of the card to be displayed.

dspslotalms

Displays statistical alarms associated with the SIU on each BPX card. The **dspslotalms** command displays a single line for each slot in a local BPX node occupied by a card. Both the card type and the current card alarm status appears. If a card is operating normally, the display shows “Clear - Slot OK.” If fault conditions continue to cause the slot errors to exceed a preset threshold, the column labeled Current Card Alarm Status reflects this fact. The **clrslotalms** command clears these alarm messages if the alarm condition has disappeared. For a list of slot errors, see the **dspsloterrs** description.

Full Name

Display slot alarms

Syntax

dspslotalms

Related Commands

dspsloterrs

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX
Lock	No

Example 1

```
dspslotalms 1
```

Description

Display the status of the card in slot 1.

System Response

```
Dl.jea          TRM   SuperUser          BPX 15    9.1    Aug. 30 1997 12:00 GMT

Slot  Type      Current Slot Alarm Status
 7 BCC          Clear - Slot OK
11 BNI-T3      Clear - Slot OK
```

Last Command: dspslotalms

Next Command:

Table 14-52 dspslotalms-Parameters

Parameter	Description
slot number	Specifies the slot number of the card to display.

dspsloterrs

Displays statistical alarms associated with the SIU on each BPX card. The **dspsloterrs** command takes a slot number as an optional parameter: if you enter **dspsloterrs** without a slot number, the display shows a single line for each slot with statistics that have accumulated for all slots.

Both the card type and current status are displayed. If a card is operating normally, the status is "Clear - Slot OK." If fault conditions persistently cause the slot errors (described in the Display Slot Errors command) to exceed a preset threshold, this fact is displayed under the column labeled Current Card Alarm Status. The **clrslotalm** command clears the alarm messages if the alarm condition has been cleared. Table 14-53 describes the errors is the display.

Table 14-53 Errors Displayed by the dspsloterrs Command

Error	Description
Standby Bus Errors	Indicates a background test over the standby bus produced an error.
Invalid Port Errors	Indicates port number was out of the range 1–3.
Polling Bus A Errors	Parity error occurred on this polling bus.
Polling Bus B Errors	Parity error occurred on this polling bus.
Bad Grant Errors	Error indicates arbiter did not issue a grant to send data before a time-out.
Tx BIP-16 Errors	Data frame transmitted had a checksum error.
Rx BIP-16 Errors	Data frame received with a checksum error.
SIU Phase Errors	Serial Interface Unit on the card did not detect the frame synch properly.
Bframe Errors	Errors detected in the BPX frame on the StrataBus or in a memory operation.

Full Name

Display slot errors.

Syntax

dspsloterrs [slot]

Related Commands

dspslotalms

Attributes

Privilege 1-6
Jobs No
Log No
Node BPX
Lock No

Example 1

`dspsloterrs 7`

Description

Display the alarm statistics for the card in slot 7 of the BPX.

System Response

```
pubsbsp1      TN      SuperUser      BPX 15      9.1 Aug. 6 1997 17:54 PDT

BCC 7          Status: Clear - Slot OK          Clrd: Date/Time Not Set
Type          Count ETS      Status      Type          Count ETS      Status
Stby PRBS Errs      0      0
Rx InvlD Prt Errs  0      0
Poll Bus A Parity   0      0
Poll Bus B Parity   0      0
Bad Grant Errs     0      0
Tx BIP-16 Errs     0      0
Rx BIP-16 Errs     0      0
SIU Phase Errs     0      0
Bfrm. Par. Errs    0      0
Rx FIFO Sync Errs  0      0
Poll Clk Errs      0      0
CK 192 Errs       0      0
```

Last Command: `dspsloterrs 7`

Next Command:

Example 2

`dspsloterrs`

Description

Display the error status for all slots.

System Response

pubsbpx1 TN SuperUser BPX 15 9.1 Aug. 6 1997 18:01 PDT

Summary of Slot Errors

Slot	Errs	Invl Stdby PRBS	Poll Rx Port	Poll A Bus Par	Poll B Bus Par	Bad Grant	Tx BIP- 16	Rx BIP- 16	SIU Phase	B- Frame Par	Rx FIFO Sync	Poll Clk	CK- 192	Errs
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Last Command: dspsloterrs

Next Command:

Table 14-54 dspsloterrs—Optional Parameters

Parameter	Description
slot number	Specifies the slot number of a card for the display.

dspslotstatcnf

Displays the enabled statistics for the specified slot.

Full Name

Display statistics enabled for a slot.

Syntax

dspslotstatcnf [slot]

Related Commands

dspslotalmcnf

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX
Lock	No

Example 1

```
dspslotstatcnf 7
```

Description

Display thresholds for slot 7.

System Response

Dl.jea TRM SuperUser BPX 15 9.1 Aug. 30 1997 12:03 GMT

Statistics Enabled on Slot 7

Statistic	Samples	Interval	Size	Peaks	Owner
Standby PRBS Errors	60	0	4	NONE	Automatic
Rx Invalid Port Errors	60	0	4	NONE	Automatic
Polling Bus A Parity Errors	60	0	4	NONE	Automatic
Polling Bus B Parity Errors	60	0	4	NONE	Automatic
Bad Grant Errors	60	0	4	NONE	Automatic
Transmit Bip 16 Errors	60	0	4	NONE	Automatic
Receive Bip 16 Errors	60	0	4	NONE	Automatic
Bframe parity Errors	60	0	4	NONE	Automatic
SIU phase Errors	60	0	4	NONE	Automatic

Last Command: dspslotstatcnf 7

Next Command:

dspsv3

Displays the Cisco StrataView Plus L3 (Layer 3) Link Control Blocks

Full Name

Display Cisco StrataView Plus L3 (Layer 3) Link Control Blocks

Syntax

dspsv3

or

dspsv3 <LCB number>

Table 14-55 Description of the Fields in the dspsv3 Display

Field	Explanation
Serial Admin	Serial link admin window
LAN Admin	LAN Admin window
LCB	Link Control Block number (0 is the gateway link)
Node	SV+ gateway node number (0 is local IO)
IP	IP address (* indicates nwip is enabled)

Related Commands

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX
Lock	No

Example 1

```
dspsv3
```

Description

Display Cisco StrataView Plus L3 Link Control Blocks.

System Response

```

nsaigx2      TN      StrataCom      IGX 16      8.4.18      June 8 1998  06:11 GMT

Number of Active SV3 Links: 2      Serial Admin: None      LAN Admin: None
LCB:  0 Node:  0 IP:*172.16.64.20
LCB:  1 Node:  3 IP:*172.16.64.20

>Last Command: dspsv3

```

Table 14-56 Description of the Fields in the dspsv3 Display

Field	Explanation
Serial Admin	Serial link admin window
LAN Admin	LAN Admin window
LCB	Link Control Block number (0 is the gateway link)
Node	SV+ gateway node number (0 is local IO)
IP	IP address (* indicates nwip is enabled)

Example 1

```
dspsv3 0
```

Description

Display Cisco StrataView Plus L3 Link Control Blocks.

Table 14-57 Description of the Fields in the Previous dspsv3 Display

Field	Explanation
LCB	LCB number
Alloc	LCB allocated (1) or no (0)
sv3_lcb_ptr	Address of LCB in memory
IP Address	SV+ IP Address
Response Timer	SV+ Link Response Timer
Idle Timer	Display SV+ Link Idle Timer
Retry Count	SV+ Link Retry Count
Current Protocol State	Link state (idle, reset, transfer, poll)
No. of buffers in the data_q	Messages in the data queue
No. of buffers in the xmit_q	Messages in the transmit queue
No. of buffers in the nflow_q	Messages in the non-flow-controlled queue
Subscribed applications	Applications to which SV+ has subscribed
Update object(s)	Robust object types that have updated status.

LCB	- LCB number
Alloc	- LCB allocated (1) or not (0)
sv3_lcb_ptr	- address of LCB in memory
IP Address	- SV+ IP Address
Response Timer	- SV+ Link Response Timer
Idle Timer	- Display SV+ Link Idle Timer
Retry Count	- SV+ Link Retry Count
Current Protocol State	- Link state (idle, reset, transfer, poll)
No. of Buffers in the data_q	- Messages in the data queue
No. of Buffers in the xmit_q	- Messages in the transmit queue
No. of Buffers in the nflow_q	- Messages in the non-flow-controlled queue
Subscribed Applications	- Applications to which SV+ has subscribed
Update	- Robust object types that have updated object(s) status.
Pending	- Robust object types that have been updated to SV+, and are waiting for an acknowledge from SV+.

Robust database update bitmap addresses.

dsptkerrs

Displays the accumulated line error counts, by failure type, for the specified trunk(s). If no trunk number is entered, a one-line summary of errors for all trunks at the local node is displayed. If a specific trunk number is entered with the command, a detailed analysis, including error threshold (ETH), is displayed. Disabled trunks have their trunk number displayed in dim, reverse video on the screen. The cltrkerrs command resets all error counts to 0. Table 14-58 contains a brief description of each error.

Table 14-58 Description of the Errors in the dsptkerrs Display

Line Type	Error	Explanation
All except ATM	Bipolar errors	Number of times two consecutive pulses have the same polarity (AMI coding only).
	Frame slips	Number of times a frame is discarded to re-establish synchronization.
	Out of frames	Number of times a loss of-frame synchronism is detected on this circuit line.
	Loss of signal	Number of times the signal level at the circuit line input went below the minimum acceptable level.
	Frame bit errors	Number of times the frame bit failed to alternate (frame error).
	CRC errors	Number of times the generated CRC character did not match the received CRC character (applies only if CRC checking is enabled).
	Out of MFrames	Number of times a multiframe synch error was detected (E1 lines only).
	AIS - 16	Number of times the Alarm Information Signal (Blue signal) was received.
Only ATM	Out of Frames	Number of times a momentary loss of-DS3 frame alignment was detected.
	Loss of sync (XX)	Number of times a loss of-DS3 frame alignment lasting more than XX seconds was detected.
	Packet Error	Number of CRC errors for a packet address.
	Line Code Errors	Number of B3ZS code errors detected.
	P-bit Parity Errors	Number of parity errors for the DS3 parity bit (P-bit) sequence.
	C-bit Parity Errors	Number of parity errors for the DS3 control bit (C-bit) sequence.
	Comm Fails	Number of BCC failed to communicate to the other node.
Only ATM	Loss of signal	Number of times the signal level at the trunk line input went below the minimum acceptable level.
	AIS (BLU)	Number of times the Alarm Information Signal (Blue signal) was received.
	Out of MFrames	Number of times a loss of-frame synchronism in the DS3 multiframe alignment was detected.
	Remote Oof	Number of times the DS3 remote alarm (indicating remote end was out of frame alignment) was received.

Full Name

Display trunk errors

Syntax**dsptkerrs** [slot | slot.port]

or

dsptkerrs <slot.port> (for virtual trunks)**Related Commands****clrtrkerrs, prttrkerrs****Attributes**

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

Example 1**dsptkerrs****Description**

Display a summary of all trunk errors at the local node.

System Response

alpha TRM YourID:1 IPX 16 9.1 Aug. 16 1997 13:13 PST

Total Errors

PLN	Code Errors	Rx Pkts Dropped	Out of Frames	Loss of Signal	Frame BitErrs	CRC Errors	Tx Pkts Dropped	Packet Errors	Packet Oofs
10	-	-	0	0	0	0	0	0	1
14	0	0	0	-	0	-	218M	0	-

Last Command: dsptkerrs

Next Command:

Example 2

dsptkerrs 16

Description

Display a detailed description of the errors for trunk 16.

System Response

D2.ipx4 TRM YourID:1 IPX 16 9.1 Aug. 4 1997 16:34 PST

Packet Line Type	Count	Status	Clear ETS	- Line Status	OK Type	Clrd: Count	Date/Time ETS	Not Set Status
Bipolar Err	0	0	0	0	Comm Fails	0	-	-
Out of Frms	0	0	0	0	Loss of Sig (RED)	1	-	-
Loss of Sig	0	0	0	0	AIS (BLU)	0	-	-
Frame BitErrs	0	0	0	0	Out of Frms (RED)	0	-	-
Tx Voice Pkt Drp	0	0	0	0	Rmt Oof (YEL)	0	-	-
Tx TS Pkt Drp	0	0	0	0	Packet Oofs (RED)	1	-	-
Tx Non-TS Pkt Drp	0	0	0	0	Rmt Alarms (YEL)	0	-	-
Tx NPC Pkt Drp	0	0	0	0				
Tx Bdata A Pkt Drp	0	0	0	0				
Tx Bdata B Pkt Drp	0	0	0	0				
Packet Err	4	1						
Packet Oofs	0	0						

Last Command: dsptkerrs 16

Next Command:

Table 14-59 dsptkerrs-Parameters

Parameter	Description
trunk number	Specifies a trunk for the error display. Without a trunk number, a summary for all physical trunks appears. To display error statistics for virtual trunks, however, you must specify a trunk number in the form <i>slot.port</i> . For all physical trunk types, the trunk number is optional: entering dsptkerrs without a trunk number lists all trunks with errors. For standard trunks, the form of a specific trunk is <i>slot</i> for single-trunk cards or <i>slot.port</i> for multi-trunk cards.

prtclnerrs

Prints the accumulated error count since the last time errors were reset. This command uses the same syntax and prints the same information as is displayed using the **dsplnerrs** command. The **clrlnerrs** command clears the error counters for circuit lines by resetting all error counts to 0.

Full Name

Print circuit line errors

Syntax

prtclnerrs

Related Commands

clrtrkerrs, prttrkerrs

Attributes

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

Example 1

```
prtclnerrs
```

Description

Print a summary of all trunk errors at the local node.

System Response

None available as command produces hardcopy.

prtlog

Prints the event log for a node. Events affecting the node are displayed in chronological order with the most recent events at the top of the log. The printout includes a description of the event, the date and time of the event, and the alarm class of the event. This command uses the same syntax and prints the same information as is displayed using the **dsplog** command. See the **dsplog** command for output information.

Full Name

Print event log

Syntax

prtlog

Related Commands

dsplog

Attributes

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

Example 1

```
prtlog
```

Description

Print the event log for a node.

System Response

None available as command produces hardcopy.

prtlerrs

Prints the accumulated error count since the last time errors were reset. This command uses the same syntax and prints the same information as is displayed using the **dsplerrs** command. The **clrlerrs** command clears the error counters for circuit lines by resetting all error counts to 0.

Full Name

Print line errors

Syntax

prtlerrs

Related Commands

dsplerrs

Attributes

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

Example 1

```
prtlerrs
```

Description

Print errors for all upped lines on a node.

System Response

None available as command produces hardcopy.

prtlerrs

Prints the accumulated error count since the last time errors were reset. This command uses the same syntax and prints the same information as is displayed using the **dsplerrs** command. The **clrnerrs** command clears the error counters for circuit lines by resetting all error counts to 0.

Full Name

Print physical line errors

Syntax

prtphyslerrs

Related Commands

dspphyslerrs

Attributes

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

Example 1

```
prtphyslerrs
```

Description

Print errors for all physical lines on an IGX node.

System Response

None available as command produces hardcopy.

prtrkerrs

Prints a summary of the trunk error counts for both physical and virtual trunks on the local node. This is the same information as is displayed using the **dsprkerrs** command. See the **dsprkerrs** command for output information.

Full Name

Print trunk errors

Syntax

prtrkerrs

Related Commands

dsprkerrs

Attributes

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

Example 1

```
prtrkerrs
```

Description

Print a summary of trunk errors.

System Response

None available as command produces hardcopy.

resetcd

Resets the hardware and software for a card. The **resetcd** command lets you cause a switch between a primary and redundant service card that have been configured for Y-cable redundancy. (Normally, a failure would cause a switch between Y-cabled cards, but you may want to cause the switch to remove the active card to upgrade its hardware, for example.)

Do not use **resetcd** on an *active* NPC, NPM, or BCC because resetting an active controller card interrupts traffic while it boots. (Resetting a controller card does not destroy configuration information.) If a redundant controller card is present and you want to switch between controllers, use the **switchcc** command to switch the active controller card to standby and the standby controller card to active. You can subsequently reset the standby controller without bringing it to the active state (and therefore not disrupt service).

The **resetcd** command takes an argument to indicate a hardware or failure reset. A hardware reset (**resetcd h**) is equivalent to physically removing and reinserting the front card and causes the card's logic to be reset. When you reset the hardware of an active card other than a controller card (an NPC, NPM, or BCC), a standby card takes over if one is available. A *failure* reset (**resetcd f**) clears the card failures associated with the specified slot. If a slot contains a front card and back card, **resetcd** resets both cards.

Full Name

Reset card

Syntax

```
resetcd <slot_num> <reset_type>
```

Related Commands

resetcd

Attributes

Privilege	1-3
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
resetcd
```

Description

Reset the card in slot 23.

System Response

No display produced.

Table 14-60 resetcd-Parameters

Parameter	Description
slot number	Specifies the card number to be reset.
H/F	Specifies whether the hardware or failure history for the card is to be reset. An “H” specifies hardware; an “F” specifies failure history.
B	Specifies to use hardware to reset the card, not the CBUS message. This applies only to the BPX.

resetpc

The **resetpc** command resets a PCS attached to a specified FRM-2 or FRP-2 physical port. Concentrated links, logical ports, and all connections are temporarily suspended while the PCS hardware performs a warm boot.

Once the PCS re-establishes communication with the FRM-2 or FRP-2, logical ports are reconfigured and connections repaired. A series of messages describing each of the concentrated links failing and being re-established is generated.

Full Name

Reset Port Concentrator

Syntax

resetpc <slot.port>

Related Commands

tstpcs, **dsppcs**

Attributes

Privilege	1–3
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
resetpc 2.3
```

Description

Reset the card in slot 23.

System Response

No display produced. (Use dsppcs to check status.)

Table 14-61 resetpc–Parameters

Parameter	Description
slot.port	Specifies the card and port number to reset.

switchcc

Switches the standby BCC or NPC (or NPM) card to active and the active card to standby. If a standby BCC card is not available, the command is not executed. If a standby BCC is available but is not ready to go active, a prompt asks you to confirm or abort the switch of the control card. This command was previously called “switchpcc”. Executing switchcc has the following effect:

- Control is transferred to the standby controller card.
- Any job currently running is aborted.
- The user is logged off.

Immediately after the switch, the controller card that was previously active reverts to a download mode. This is indicated by the flashing front panel FAIL lamp. The system software image that is always stored in ROM is downloaded to RAM in the event that the system software was corrupted.

After this is completed, the configuration database is downloaded from the newly active controller card to complete the download. This process takes a number of minutes so this controller card is not available for standby operation until this download process is completed. The switchcc command results in a very brief interruption of all traffic. Consequently, you should use **switchcc** only when the network can tolerate a brief interruption.

The [f] option for the **switchcc** command will force a CC switchover even if there are pending updates. If you don't specify the [f] option, the system will warn you about pending updates before the switch and give you a choice to not switch over.

Full Name

Switch control card

Syntax

switchcc [f]

Related Commands

dspcd, dspcds

Attributes

Privilege	1-3
Jobs	Yes
Log	No
Node	IPX, IGX, BPX
Lock	Yes

Example 1

`switchcc`

Description

Change the active NPC/BCC to standby, and the standby NPC/BCC to active.

System Response

No display produced.

tstcon

The **tstcon** command tests the integrity of an IPX or IGX data path by inserting node-generated test data. The connection service is affected for only a few seconds during the test. Only existing connections can be tested. One channel at a time is tested to minimize disruption. Because service is disrupted for a short time, no conditioning is applied during the test. If a failure is detected, the fault is isolated to a replaceable IPX or IGX node, and the standby card (if available) automatically goes into service. During fault isolation, conditioning is applied to both ends of the connection.

In addition to IPX and IGX routing nodes, the **tstcon** command can test an IPX that has been configured as an interface shelf (IPX/AF) in a tiered network but only after a local-remote loopback has been set up with the **addlocrmtlp** command. After testing is complete, the loopback established with **addlocrmtlp** must be removed by **dellp**.

Table 14-62 describes the results of **tstcon** execution.

Table 14-62 Results of tstcon Execution

Result	Description
Completed	Total number of tests that were run.
Aborted	Number of tests that did not run because the connection was not testable because of loopbacks or missing or failed hardware.
Failures	Number of tests that failed.
Repaired	Number of connections that failed a previous test and have passed the current test.

If you enter a range of channels (with connections and some without), the unconnected channels are skipped. You can enter the **tstcon** command on the node at either end of the connection. Unlike the **addloclp** and **addrmtlp** commands, **tstcon** does not require external test equipment. Connections cannot be tested with the **tstcon** command if they are currently looped back with either the **addloclp** or **addrmtlp** commands.

Table 14-63 describes examples of the **tstcon** command with various arguments. Table 14-64 and Table 14-65 describe the required parameters and optional parameters in these examples.

Table 14-63 Examples of tstcon Specification

Command	Description
tstcon *	Test all connections.
tstcon * f	Test all frame relay connections.
tstcon * v x	Test all voice connections, abort on first failure.
tstcon 1.3	Test connection on channel 1.3.
tstcon 4.2.200	Test connection on channel 4.2.200.
tstcon 1.13-16	Test connections on channels 1.13-16.
tstcon 3.21-24 x	Test connections on channels 3.21-24, abort on first failure.
tstcon 3.11-20 v	Test voice connections only on channels 3.11-20.
tstcon 3.11-20 v x	Test voice connections only on channels 3.11-20, abort on first failure.
tstcon 3.21-22 v 5	Test voice connections only on channels 3.21-22 and repeat the test 5 times.
tstcon 3.14-15 d x 5	Test data connections on channels 3.14-15: repeat test 5 times. Abort on failure.

For V.35 ports configured for DTE, the following three bulleted items apply:

- Model D FRP - along with software Rel. 8.1 or higher, supports Foresight dynamic congestion avoidance feature. The Model D FRP is required for the AIP application in system software release 7.1. The enhanced V.35 loop back test is available with this card when using Firmware Revision F and system software 7.1.
- A loop back test pattern signal (Test Mode) is transmitted to a modem or NTU to initiate a loop back. Some modems and NTUs recognize this code but do not return the TM signal even though a loop has been set up. The FRPs, with the exception of the Model D Firmware Rev. F, wait to receive the TM signal from the external equipment before the data test is performed. If the FRP Model D Firmware Rev. F receives the TM signal return, it responds. If FRP Model D Firmware Rev. F does not receive the TM signal, it waits 10 secs and then sends the test pattern. If the external equipment is inoperative or disconnected, the test fails. After the test is completed, transmission of the codes is terminated and the circuit returns to normal operation. The test result is displayed on the node's terminal **tstport** screen.
- Some external equipment support loopback testing but do not recognize the loop test pattern signal (Test Mode) in the data stream. The FRP/FRI toggles the V.35 LLB (local loop back) or the LRB (remote loop back) leads and then sends the test pattern after the time-out period (10 secs). If the external equipment is inoperative or disconnected, the test fails. The IPX or IGX control terminal displays the result of **tstport** execution.

Full Name

Test connections

Syntax

tstcon <channel(s)> [-nolp] [type] [failure abort] [repeat count]

Related Commands

dspscons, **dspscons**

Attributes

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

Example 1

```
tstcon 9.1.100
```

Description

Test connection 9.1.100. The connections screen appears with the connection for channel 9.1.100 highlighted. The system prompts to confirm the test. A "T" after channel under test indicates that the test is currently running on that channel. When the first test is completed, a message appears indicating the results of the tests. As each test is completed, the T moves to the next channel to be tested and the message is updated to include the cumulative results of the tests. When the test is completed for all the specified connections, the "T" disappears and the message indicates the total number of tests and the cumulative results of the test.

System Response

```
alpha          TRM  YourID:1      IPX 16      9.1      Aug. 23 1997 11:04 PST

Local          Remote      Remote
Channel        NodeName    Channel     State  Type      Compression  Code Avoid COS O
5.1 T          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
                                0 L
                                0 L
                                0 L
                                0 L
```

```
Last Command: tstcon 9.1.100

Tests: Completed = 1, Aborted = 0, Failed = 1, Connections Repaired = 0
Next Command:
```

Table 14-64 **tstcon-Parameters**

Parameter	Description
channels	Specifies the specifies the channel or set of channels whose connections are to be tested. An "*" specifies all connections. Channel is specified in one of the following formats: slot.channel voice connection slot.port data connection slot.port.DLCI frame relay connection



Table 14-65 **tstcon–Optional Parameters**

Parameter	Description
-nolp	No automatic loopback. This parameter applies only to local-remote loopbacks and is mandatory for testing a multi-segment connection in a tiered network.
type	Restricts the test to the designated connection type. Valid connection types are listed below. If no connection type is designated, all connections are tested. v Tests only voice connections. d Tests only data connections. f Tests only frame relay connections.
x	Aborts the test as soon as a failure is detected. If an "x" is not entered, all specified connections are tested regardless of the test results for each individual connection.
repeat count	Specifies the number of times the test is to be repeated. The range is 1–50. If no test count is specified, the test is run once.

tstconseg

Externally tests the integrity of a connection by sending OAM segment loopback cells over the specified channel for the specified number of times.

Table 14-66 describes the reported results of **tstconseg** execution.

Table 14-66 Results of the tstconseg Display

Result	Description
Completed	Total number of tests that were run.
Aborted	Number of tests that did not run because the connection was not testable because of loopbacks or missing or failed hardware.
Failures	Number of tests that failed.
Repaired	Number of connections that failed a previous test and have passed the current test.

Full Name

Test connection segment

Syntax

tstconseg <channel> <iteration count> [A | a]

Related Commands

dspcons

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	BPX, IGX
Lock	Yes

Example 1

```
tstconseg 11.2.10.17
```


Description

Test connection segment 11.2.10.17. The connections screen appears with the connection for channel 11.2.10.17 highlighted. The system prompts to confirm that the test should begin. A “T” after the channel under test indicates the test is currently running on that channel. When the first test is complete, a message appears indicating the results of the tests. As each test is completed, the T moves to the next channel to be tested and the message is updated to include the cumulative results of the tests. When the test is completed for all the specified connections, the “T” disappears and the message indicates the total number of tests and the cumulative results of the test.

System Response

```
nmsbpx23      TN      SuperUser      BPX 15      9.1      Aug. 16 1997 12:37 PST

Local          Remote      Remote
Channel        NodeName    Channel      State  Type      Route
11.2.10.17    nmsbpx23   11.1.11.17  Ok    atfst     Avoid COS 0
```

```
This Command: tstconseg 11.2.10.17 1
```

```
Perform a tstconseg on this connection (y/n)?
```

```
-----
```

```
nmsbpx23      TN      SuperUser      BPX 15      9.1      Aug. 16 1997 12:38 PST
```

```
External Connection Segment Test
```

```
Status: Test Complete
```

```
Connection ID      Test Count      Failure Count      Success Count
11.2.10.17         1                1                  0
```

```
Last Command: tstconseg 11.2.10.17 1
```

```
Next Command:
```

Table 14-67 tstconseg–Parameters

Parameter	Description
channel	Specifies the slot.port.vpi.vci of the channel to be tested.
iteration	Number of times to repeat the test.

Table 14-68 tstconseg–Optional Parameters

Parameter	Description
A a	Specifies that the test be aborted if an error occurs (not case sensitive).

tstdelay

Puts the remote end of the connection into a loopback state, requests the FRP (frame relay) or ASI (ATM) to generate a test packet, calculates the round trip delay (RTD), and displays the round trip delay. This delay includes the FRP or ASI and trunk queuing and processing delays throughout the network. The measured delay using **tstdelay** differs from the ForeSight RTD, which uses a high-priority packet and does not include processing and queuing delays. Using the **tstdelay** command requires that the FRP is at least a Model D. This test interrupts transmission on the connection during the test. Test results appear at the bottom of the screen (this may include a timeout message, as in Example 1).

Testing an IPX or IGX node that has been configured as an interface shelf requires execution of **addlocrmtlp** prior to **tstdelay** and a **tstdelay** parameter that applies only to tiered networks (see optional parameter table). After testing is complete, the loopback established with **addlocrmtlp** must be removed by **dellp**.

Full Name

Test Frame Relay connection delay

Syntax

```
tstdelay <slot.port.DLCI> [count] | tstdelay <slot.port.vpi.vci> [-nolp] [count] [y]
```

Related Commands

addlocrmtlp, **dellp**, **dspcons**, **dspscons**

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
tstdelay 9.1.100
```

Description

Test the delay on frame relay channel 9.1.100.

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1      Aug. 23 1997 11:05 PST

Conn: 9.1.100   gamma      8.1.200   fr
      MIR      CIR      VC Q Depth  PIR      Cmax    ECN QThresh  QIR      FST
      9.6/9.6   9.6/9.6   5/5      256/256   10/10   65535/65535 9.6/9.6   n
% Util: 100/100
Owner: LOCAL   Restriction: NONE  COS: 0
Group: NONE    Priority: H   TestRTD: 0 msec

Path:   alpha  14--13beta  15--15gamma
Pref:   alpha  14--13beta  15--15gamma

alpha 9.1.100          gamma 8.1.200
FRP:   OK              FRP:   OK
FRI:   OK              FRI:   OK

Last Command: tstdelay 9.1.100

Test delay timed out
Next Command:
```

Example 2

tstdelay 9.1.1.1

Description

Test the delay on ATM connection 9.1.1.1. The first prompt that follows initial command entry is for whether the ForeSight RTD should be included. The second prompt is for confirming that the test should proceed.

System Response

```
bpxl          TN   SuperUser          BPX 15    9.1      Aug. 31 1997 13:45 PST

Conn: 9.1.1.1   ]bpx6      11.1.1.1   abr      Status: OK
      SCR      MBS      MCR      ABR PCR    UPC FST CLP % util
      4000/4000 1000/1000 4000/4000 4000/4000 y y y 100/100
Owner: REMOTE  Restriction: NONE  COS: 0
Group: NONE    ForeSightRTD: 40 msec TestRTD: 10 msec

Path:   bpx1    1.3-- 3.3bpx6
Pref:   Not Configured

bpxl          ASI-T3    : OK          bpx6      ASI-T3    : OK
          Line 9.1 : OK          Line 11.1 : OK
          OAM Cell RX: Clear

Last Command: tstdelay 9.1.1.1 n

Round trip delay is 10 msec.
Next Command:
```



Table 14-69 tstdelay-Parameters

Parameter	Description
channel	Specifies the channel of the connection to be tested. It can be a frame relay connection specified as slot. port. DLCI or an ATM connection specified as slot.port.vpi.vci.

Table 14-70 tsfdelay-Optional Parameters

Parameter	Description
-nolp	No automatic loopback. This parameter applies to only local-remote loopbacks and is mandatory for testing a multi-segment connection in a tiered network.
repeat count	Specifies the number of times the test is to be repeated. The range is 1–50. If you do not specify a count, the test runs once.
ForeSight RTD (y/n)	Specifies that the ForeSight RTD is included and applies to ATM connections only.

tstpcs

The **tstpcs** command tests the data path for PCS ports for a selected module. The *port* parameter specifies the particular PCS module. The *port* parameter specifies an FRM-2 or FRP-2 physical port to which one of the PCS modules connects.

Upon command entry, each of the 11 ports for the PCS goes into a loop state. In this state, data goes to each port and loops back to the PCS module. Test frames go to a port and are checked for integrity when they return. The test frames also go out on the port.

During this test, any frame relay connection data received by the FRM-2 or FRP-2 destined for one of the ports is discarded. The other three Port Concentrator modules are unaffected. After the test, the port is returned to its previous configuration.

The PCS tests available RAM, and sets each of the 11 ports into a loop mode. Ten frames of data are sent to each port and checked to make sure the same frames are received in entirety and order.

During a test, the **dsppcs** screen shows “Testing” then either “Passed” or “Failed.” The test takes about 15 seconds.

Full Name

Test Port Concentrator Shelf

Syntax

tstpcs <slot.port>

Related Commands

dsppcs, **resetpc**

Attributes

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

Table 14-71 **tstpcs–Parameters**

Parameter	Description
slot.port	<i>Slot</i> is the location of an FRM-2 or FRP-2 card. <i>Port</i> selects the physical port to which a PCS module connects. The range for port is 1–4.

tstport

Executes a port loopback test on the specified data port. Using **tstport** without the optional parameter performs an internal test. The loopback for the internal test is performed on the IPX or IGX back card and is used to test just the IPX or IGX front and back cards. The test disables the communications for that port and the back card is placed into a loopback mode. The applicable card sets for the **tstport** command are the FRP, FRM, SDP, HDM, LDP, and LDM. The card under test sends several frames of data to the port on the interface card, loops them back, and checks their integrity.

If connections exist on the port being tested, the **dspcons** screen appears. If no connections are present, the **dsprport** screen appears. A flashing ‘T’ in the connections screen indicates those connections affected by the test. Either a “(” character or a “)” character indicates the loopback in the **dsprport**. If a local or remote test fails, the port itself is automatically tested (internal) to determine if the IPX or IGX node caused the failure. The following are example command lines:

```
tstport 5.3          internal loopback port test—this is the default loopback
tstport 5.3 n       near external port loopback test
tstport 5.3 f       far external port loopback test.
```

For a frame relay port or an LDP or LDM port, an external loopback may be placed at the near (local) or far (remote) modem during the test. For a DDS port, the external loopback is a CSU or DSU loopback at the remote DSU device. If an external port loopback test fails, the internal port loopback test is executed to determine if the IPX or IGX node caused the failure. The **cnfict** command can be used to specify the interface control lead template used to condition the output control leads during loopback.

The local and remote modem tests that test the near end and far end modems or NTUs require the IPX or IGX back card to operate as a DTE, so the modem acts as a DCE in this case. The back card asserts the local or remote loopback pin of the V.35 port. For X.21 ports, which do not have a loopback pin defined, the back card sends a loopback command in the data stream to cause the NTU to go into loopback mode. The test then begins.

The loopback test operation sends several frames of test data, receives them back, compares them, and verifies their integrity. The loopback pin subsequently returns to the inactive state, and the modems return to normal operation. The local or remote test works with only those modems that recognize a local and remote loopback command.

Before starting a test, the user must be sure the cabling is correct for the specific equipment. The test conventions are described in CCITT V.54 and X.21 specifications. Only the near (n) and far (f) options are available for the Model C SDP. If the near or far tests fail, no internal test is executed on the SDP to isolate the problem. The SDP is not failed due to a **tstport** failure.

Full Name

Test port

Syntax

```
tstport <slot.port> [n | f]
```

Related Commands

cnfict, **dspcons**, **dsprport**

Attributes

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

Example 1

tstport 9.1

Description

Perform an internal port test on a frame relay port.

System Response

```
alpha          TRM   YourID:1          IPX 16    9.1    Aug. 23 1997 11:27 PST

Conn: 9.1.100   gamma      8.1.200   fr
      MIR      CIR      VC Q Depth   PIR      Cmax   ECN QThresh   QIR      FST
      9.6/9.6   9.6/9.6   5/5       256/256   10/10   65535/65535 9.6/9.6   n
% Util: 100/100
Owner: LOCAL  Restriction: NONE  COS: 0                      Status: Failed Test
Group: NONE   Priority: H   TestRTD: 0 msec

Path:   alpha  14--13beta  15--15gamma
Pref:   alpha  14--13beta  15--15gamma

alpha 9.1.100          gamma 8.1.200
FRP:  OK              FRP:  OK
FRI:  OK              FRI:  OK
```

Last Command: tstport 9.1

No external clock is detected for DTE
Next Command:

Example 2

tstport 32.1 n

Description

Perform a local (near end) loopback test on port 32.1 (requires port to be configured as DTE).

Example 3

```
tstport 32.1 f
```

Description

Perform a remote (far end) loopback test on port 32.1 (requires port to be configured as DTE).

Example 4

```
tstport 9.1
```

Description

Perform a test of an FRP port.

Access Device Commands on a Node

This chapter describes the commands that apply specifically to the Cisco access devices (such as the Cisco 3801). The commands in this chapter apply to the trunk between the FTC or FTM card set in an IPX or IGX node and an access device.

The contents in this chapter are as follows:

- Introduction
- Descriptions of access device procedures
- Descriptions of access device commands

In addition to commands that are unique to the Cisco access devices, a larger number of commands are common to the Cisco access devices and the FastPAD series of access devices. The descriptions for these common commands appear in the chapter titled “FastPAD Connections.”

The commands you enter at the terminal attached to the access device itself are IOS commands. Refer to the documentation for the access device for descriptions of the IOS commands.

Introduction

This chapter describes the commands that apply to an access device. When you use other, common commands such as **addcon**, **dspcon**, **cnfchutl**, and so on, use the following syntax to, for example, specify the access device when adding a connection:

addcon *slot.port.connection_ID*,

where *slot.port.connection_ID* is the slot and port number of the FTC or FTM and *connection_ID* is the connection identifier.

Summary of Commands

Table 15-1 shows the name and starting page for the description of each command.

Table 15-1 Access Device Commands

Command	Full Name	Page
addad	Add access device	15-3
addcon	Add connection	15-5
cnfadcmtr	Configure access device congestion management timer	15-9
cnfadcon	Configure access device connection (bandwidth) parameters	15-11
delad	Delete access device	15-14
dspads	Display (all) access devices	15-16
dspcon	Display a connection	15-18
dspcons	Display connections	15-20
resetad	Reset access device	15-23
restartad	Restart access device protocol handshake	15-24

addad

Adds an access device to a node.

Full Name

Add access device

Syntax

addad <slot.port> <access_device_ID> <DLCI> [IP address] [number of mask bits]

Related Commands

dspads

Attributes

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

Example 1

```
addad 12.3 3 990 0
```

Description

Add an access device at slot 12, port 3. The access device ID is 3. The DLCI is 990.

System Response

```

duvel          TRM   SuperUser          IPX 16      9.1 Mar. 28 1997 08:19 GMT
                Access Devices Information
  Slot.Port  Name          ID  DLCI  Type      Alarm IP Address
    12.1      sbrin02          7   990                UNREACHABLE
    12.3      sbrin02          3   990  3800      OK 192.168.6.162/24
Last Command: dspads
This Command: addad 12.2 4 990
Enter Cong Mgmt. Timer (0=Disabled or 4-350 in 10ms units): 0

```

Last Command: addad 12.3 3 990

Next Command:

Table 15-2 addad-Parameters

Parameter	Description
slot.port	Specifies the slot and port number of the trunk to add.
access_device_ID	Device ID of the access device. The range for the ID is 0–255.
DLCI	The available range is 16–1007.

Table 15-3 addad-Optional Parameters

Parameter	Description
IP address	The IP address of the access device is optional. If you enter an IP address, it overrides the IP address that currently exists on the access device.
number of mask bits	The number of bits in the IP subnet mask.

addcon

Adds a connection between an access device and another endpoint. You add connections between the following endpoints:

- UVM and FTM/FTC
- FTM/FTC and FTM/FTC
- FTM/FTC and FRM/FRP
- CVM/CDP and FTM/FTC

Note that, if one end of the connection is a CVM or CDP, you must add the connection at the CVM/CDP.

Three connection types are possible for an access device. After you have specified the local and remote connection identifiers, the interface prompts you for a connection type. The type depends on the endpoint cards, as follows:

- For UVM and FTM/FTC endpoints, the connection type is “voice.”
- For FTM/FTC and FTM/FTC endpoints, the connection type is “session.”
- For FTM/FTC and FRM/FRP endpoints, you specify the type as a frame relay class.
- For CVM/CDP and FTM/FTC endpoints, the connection type is “voice.”

Full Name

Add a connection

Syntax

The syntax depends on the endpoint cards.

UVM to FTM/FTC:

```
addcon <slot.line.channel> <node> <slot.port>.<Access Device ID>.<Connection ID>
<Algorithm = a32 | c32 | g729r8 | g729r8v | g729ar8 | g729ar8v>
```

FTM/FTC to FTM/FTC:

```
addcon <slot.port>.<Access Device ID>.<Connection ID> <remote node> <slot.port>.<Access
Device ID>.<Connection ID>
```

FTM/FTC to FRM/FRP:

```
addcon <slot.port>.<Access Device ID>.<Connection ID> <remote node> <slot.port>.<DLCI>
```

CVM/CDP to FTM/FTC:

```
addcon <slot.port> <remote node> <slot.port>.<Access Device ID>.<Connection
ID>[compression algorithm]
```

Related Commands

dspads

Attributes

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

Example 1

```
addcon 4.3.5.31 sw25 4.1.5.31
```

Description

Add a local connection from 4.3.5.31 to 4.1.5.31. The access device ID is 5, the connection ID is 31.

System Response

```
sw25          TN      SuperUser      IPX 8      9.1 May 26 1997 00:26 GMT

From          Remote      Remote
4.3.31        sw25        4.1.31      State Type      Compress Code COS
4.3.31        sw25        4.1.31      Ok   session
4.3.32        sw25        4.1.32      Ok   fst
4.3.33        sw25        4.1.33      Ok   fst
```

This Command: addcon 4.3.5.31 sw25 4.1.5.31 session

Add these connections (y/n)?

Table 15-4 addcon-Parameters

Parameter	Description
slot.port	Specifies the slot and port number of the trunk to add. (FTM/FRM)
slot.line.channel	Specifies the slot, line, and channel number of the trunk to add. (UVM/CVM)
access device_ID	Specifies the access device ID number. The range for the access device_ID is 1–255. Access devices on the same trunk are assigned in increasing order.
connection_ID	Specifies a connection identifier. The range for the connection_ID is 1–252.
DLCI (only for FRP or FRM endpoints)	The available range is 16–1007.

Table 15-5 addcon–Optional Parameters

Parameter	Description
compression algorithm	The optional compression algorithm can be one of the following: <ul style="list-style-type: none">• a16• a24• a32• g729r8• g729r8v• g729ar8• g729ar8v

cnfadcmtr

Configures the congestion management timer. The timer is applicable only if ForeSight is active.

The configuration management timer specifies how often rate-adjustment messages are passed between the FTC or FTM and the access device. This timer mechanism lets the congestion management provided by ForeSight extend to access devices. If you enter a 0 for the value, the interface card and device do not exchange rate adjustment messages.

Full Name

Configure access device congestion management timer

Syntax

cnfadcmtr <slot.port> <Cong. Mgmt. Timer>

Related Commands

addad, **dspads**

Attributes

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

Example 1

```
cnfadcmtr 4.3 350
```

Description

Configure the congestion management timer for port 3 of the card in slot 4 for 350 milliseconds.

System Response

```
sw25          TN      SuperUser      IPX 8      9.1 Apr. 1 1997  11:17 GMT
```

```

      FrontCard  BackCard
      Type  Rev  Type      Rev  Status
1  NPC    BFF
2  Empty reserved for NPC
3  CDP    BFC  E1      AD   Active
4  FTC    CF15 FPC-V35  AA   Active
5  AIT    AJF  AIT-T3  AE   Active
6  NTC    EUJ  E1      AN   Active
7  Empty
8  FTC    BHJ  FPC-V35  AA   Standby

```

This Command: cnfadcmtr 4.3

Enter Cong Mgmt. Timer (0=Disabl'd or 40-350 in 10ms units): 350

Table 15-6 cnfadcmtr-Parameters

Parameter	Description
slot.port	Specifies the slot and port number.
Cong. Mgmt. Timer	The setting for the timer. The number you enter is actually a multiplier for the base of 10 milliseconds, so the granularity is automatically 10 milliseconds. The range for the multiplier is 4–350, so the range for the timer is 40–3500 milliseconds. The default (no user-input) is 100 ms. To disable the timer, enter a 0.

cnfadcon

Configures bandwidth parameters for the trunk connection between an access device and the FTC or FTM. The parameters for **cnfadcon** are bi-directional. (Type a slash between the parameter for each direction.) The first parameter is from the node to the access device. The second parameter is from the access device to the node. An asterisk (*) indicates that the value is to remain unchanged for that direction. The only parameter that is not bi-directional is FST (ForeSight enable = “y” or “n”).

The command line interface does not prompt for individual bandwidth parameters. Therefore, refer to the **cnfadcon** options table to see the order in which you type the parameters.

Full Name

Configure access device connection

Syntax

cnfadcon <slot.port> <bw_parameters>

Related Commands

dspcon, cnffrcon, cnfcon

Attributes

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

Example 1

cnfadcon 4.2 76.8/76.8

Description

Configure the device trunk at port 2 of the card in slot 4 to have MIR (and so on) of 76.8 Kbps.

System Response

```
sw25          TN      SuperUser      IPX 8      9.1 Apr. 2 1997 18:44 GMT
Conn: 4.2.100      ]  sw25      4.3.101      session      76 Kbps
                                      Status:OK
      MIR      CIR      VC Q Depth      PIR      Cmax      ECN QThresh      QIR
76.8/76.8 76.8/76.8 600/600      76.8/76.8 1/1      300/300      76.8/76.8
Priority: H      TestRTD: 0 msec      FST: n % Util: 100/100
```

Path: Route information not applicable for local connections

```
sw25      FTC: OK      sw25      FTC: OK
          FPC: OK      sw25      FPC: OK
          Access Device: OK      Access Device: OK
```

Last Command: cnfadcon 4.2.100 76.8/76.8

Next Command:

Table 15-7 cnfadcon-Parameters

Parameter	Description
slot.port	Specifies the slot and port on an FTC/ FTM for an access device connection.
bw_parameters	<p>The bandwidth parameters are as follows:</p> <ul style="list-style-type: none"> • MIR/MIR is defined as fr_MIR_Tx / fr_MIR_Rx, where fr_MIR is the minimum information rate for a connection. The range is 2.4 Kbps–2048 Kbps. • CIR/CIR is defined as fr_CIR_Tx and fr_CIR_Rx, where fr_CIR is defined as the committed information rate guaranteed to the user. The CIR range is 2.4 Kbps–2048 Kbps. • VC_Q/VC_Q is defined as $fr_vc_q_Tx / fr_vc_q_Rx$, where fr_vc_q Tx is the maximum transmit VC queue depth. The VC_Q range is 1–65535 bytes. (An alternative to this parameter is possible, as the description of <i>Bc</i> shows.) <p>or</p> <p>Bc/Bc is defined as fr_Bc_Tx / fr_Bc_Rx. Bc has meaning for only ForeSight connections. If you have selected Frame Relay Forum standard parameters (through the cnfsysparm command), the Committed Burst (Bc) parameter appears instead of VC_Q. Bc is the amount of data the network can accept over a variable time interval (Tc) for committed delivery on a specific PVC. The range for Bc is 1–65535 bytes. The relationship between Bc and VC_Q is:</p> $Bc = VC_Q / ((1 - (CIR/port\ speed)))$ <ul style="list-style-type: none"> • PIR/PIR is defined as fr_PIR_Tx / fr_PIR_Rx, where fr_PIR_Tx is the peak transmit rate for the PVC. The PIR range is 2.4–2048 Kbps. You can also specify the value 0 to cause PIR to default to the port speed. Thus, you can modify PIR, leave it the same, or set it to the port speed. (An alternative specification for this parameter is possible, as the description of <i>Be</i> shows.) <p>or</p> <p>Be/Be is defined as fr_Be_Tx / fr_Be_Rx. If you have selected Frame Relay Forum standard parameters (through the cnfsysparm command), the PVC uses Excess Burst (Be) instead of PIR. Be is the <i>amount</i> of transmit/receive data above the number of bytes set by Bc if enough bandwidth is available. Specify Be in bytes within the range 1–65535. Delivery of Be-data is not guaranteed. Be has meaning to only ForeSight. The relationship between Be and PIR is:</p> $Be = Bc * ((PIR/CIR) - 1)$ <ul style="list-style-type: none"> • Cmax/Cmax is defined as fr_cmax_Tx / fr_cmax_Rx, where $cmax$ is the maximum credits the connection can accrue. The Cmax range is 1–255 packets per second (pps). • ECNQ_thresh/ECNQ_thresh are the transmit and receive threshold settings for the explicit congestion notification control queues. The range for ECNQ_thresh is 1–65535 bytes. • QIR/QIR is defined as fr_QIR_Tx / fr_QIR_Rx, where fr_QIR is the quiescent information rate for a connection, which is the initial transmit rate after a period of inactivity on the channel. If you do not specify the quiescent receive rate fr_QIR_Rx, the system sets it to the transmit value. The values are specified in Kbps and must be in the range MIR–PIR. In addition, you can specify the value 0 to default to the MIR. QIR has meaning for only ForeSight connections. • FST enables or disables (purchased) ForeSight option for a connection. Valid entries are “y” (use ForeSight) or “n” (do not use ForeSight). If the ForeSight status changes, the network reroutes the connection.

delad

Deletes an access device from a node. Before you can delete an access device, you must remove all connections from the device by using the **delcon** command.

Full Name

Delete access device

Syntax

delad <slot.port>

Related Commands

addad, dspads

Attributes

Privilege	1-2
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1`delad 31.1`**Description**

Delete the access device at 31.1.

System Response

```
IPX          TRM   SuperUser          IPX 32    9.1 Date/Time Not Set
```

```
Access Device Information
```

Slot.Port	Name	ID	DLCI	Port_ID	Alarm
31.1	ad1	1	17	0	OK
31.2	ad2	2	18	0	OK
31.3	ad3	3	19	0	OK
31.4	ad4	4	20	0	OK

```
This Command: delad 31.1
```

```
Delete access device (y/n)?
```

Table 15-8 delad-Parameters

Parameter	Description
slot.port	Specifies the slot and port number.

dspads

Displays all access devices in the node. The **dspads** command takes no parameters. The displayed information consists of the following:

- The IPX or IGX slot and port that connect to each access device
- The name of the access device
- The access device ID number of the channel between the interface card and the device. Multiple access devices on the same channel are displayed in increasing order.
- The DLCI of the device
- The type of access device (such as a Cisco 3810), as reported by the device
- The alarm status (which can be OK, init., or failed)
- The setting for the Congestion Management Timer (in 10-millisecond multiples, 0 if the CMT is disabled)
- The IP address of the device and the number of bits in the subnet mask

Note If an access device name and IP address are not relevant, such as when an FTC/FTM port loopback is simulating access devices, blank spaces appear in the “Name,” “Type,” and “IP Address” fields of the display.

Full Name

Display (all) access devices

Syntax

dspads

Related Commands

addad, delad, cnfadcmtr

Attributes

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

Example 1

dspads

Description

Display all the access devices in the current node.

System Response

```
sw25          TN      SuperUser      IPX 8      9.1 Apr. 1 1997  13:12 GMT

                Access Devices Information

Slot.Port  Name      ID  DLCI  Type      Alarm      CMT  IP Address
-----
   4.2          8   990          OK          0
   4.3  sbrin01  4   990  3800      OK          91  192.168.6.161/24
```

Last Command: dspads

Next Command:

dspcon

Displays connection information for a connection. The information displayed includes:

- The channel number at both the local and remote ends of the connection
- The node name at both ends of the connection
- The type or data rate of the connection
- The connection priority (low or high)
- The preferred route for the connection (if configured)
- The status of the front and back cards and access devices associated with the connection
- Any Y-cable conflicts (LDI, CDP for example)
- If one endpoint is a CDP or CVM, the compression status (VAD on or off, ADPCM on or off)
- The bandwidth parameters for the connection
- The ForeSight enable status
- The percent of utilization
- The connection descriptor (if configured)
- The circuit round trip delay (RTD) if ForeSight is enabled

A failure that affects the connection flashes on the screen. The possible status messages are:

- OK Connection OK.
- FAILED Connection failed.

Full Name

Display connections

Syntax

dspcon <channel>

Related Commands

addcon, cnfcondsc, cnfcos, cnfpref, dspcons

Attributes

```

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

```

Example 1

```
dspcon 4.1.33
```

Description

Display connection information for frame relay channel 4.1.33.

System Response

```

sw25          TN      SuperUser      IPX 8      9.1 May 25 1997 23:07 GMT

Conn:  4.1.33          sw25          4.3.33          fst          Status:OK
      MIR      CIR      VC Q Depth      PIR      Cmax      ECN QThresh      QIR
      56/56      56/56      65535/65535      512/512      10/10      65535/65535      128/128
Priority: L  ForeSightRTD: 40 msec  TestRTD: 0 msec  FST: y  % Util: 100/100

Path:  Route information not applicable for local connections

sw25      FTC:  OK          sw25      FTC:  OK
          FPC:  OK          sw25      FPC:  OK
          Access Device: OK          Access Device: OK

Last Command: dspcon 4.1.33

Next Command:

```

Table 15-9 dspcon-Parameters

Parameter	Description
channel	Specifies the channel in the format <i>slot.port.connection_ID</i> . The range for <i>connection_ID</i> is 1-252. The dspcon command displays information for one connection at a time.

dspcons

Displays a summary of the connections on an IPX or IGX node. Table 15-10 shows the fields displayed in the **dspcons** screens.

Table 15-10 Information in the dspcons Display

Field	Description
Local Channel	The connection's channel at this node.
Remote Node Name	The name of the node at the other end of the connection.
Remote Channel	The connection's channel at the remote node.
State	The state of the connection(s) as follows: <ul style="list-style-type: none"> • OKRouted • DownDowned • OK DownedWaiting for onhook to occur to allow courtesy down to take place for connection(s) that have been courtesy downed using the dncon command. • FailedUnrouted, but trying
Type	The type of connection (v = voice, d = data, fr = frame relay, atfr = ATM to frame relay interworking, atfst = ATM to frame relay interworking with ForeSight, -fail = failed connections; data rate in kbps for data)
Route Avoid	The type of lines to avoid when routing (satellite lines, terrestrial lines, lines with zero code suppression).
Compression	The type of compression applied to the connection (PCM, PCM and VAD, ADPCM, VAD and ADPCM for voice connections), (DFM for data connections).
COS	The Class of Service.
Owner	The end of the connection in control of re-routing.
Descriptor	The connection descriptor string (if +d option specified).
Loopback	A connection with a local loopback is indicated by a right parenthesis symbol between the "Local Channel" and "Remote NodeName" columns. A frame relay connection with a port loopback is indicated by a right bracket symbol between the "Local Channel" and "Remote NodeName" columns. A connection with a remote loopback is indicated by a right parenthesis symbol before the channel number in the "Remote Channel" column.
Local/Remote A-bit	A-bit status on the local and remote nodes if -abit option selected. Note that -abit is incompatible with -v, -d, and +d.

Full Name

Display connections

Syntax

```
dspcons [start_channel] [nodename] [state] [type]
[-g | +d | -v | -d | -f | -abit | -fabit | -atfr | -siw | -fail | -down]]
```

Related Commands

addcon, cnfchadv, chfchdfm, cnfcondsc

Attributes

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

Example 1

dspscons

Description

Display a summary of all connections.

System Response

```
sw25          TN      SuperUser      IPX 8      9.1 May 25 1997 23:29 GMT

Local          Remote      Remote
Channel        NodeName   Channel   State  Type      Compress  Code COS
4.1.32         sw25       4.3.32   Ok     fst
4.1.33         sw25       4.3.33   Ok     fst
4.3.32         sw25       4.1.32   Ok     fst
4.3.33         sw25       4.1.33   Ok     fst
```

Last Command: dspscons

Next Command:

Table 15-11 dspcons–Optional Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. The start channel on a CDP or CVM is specified as <i>slot.channel</i> . The start channel on a UVM is <i>slot.line.channel</i> .
node name	Specifies that only connections to this remote node from the local node be displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed.
connection type	Specifies that only connections of a certain type be displayed. If you do not add at least one argument to specify a particular connection type, all connections appear. When you enter the connection type on the command line, precede it with a hyphen (-). In some cases, you can add more than one connection type (with a space between), but not all compound arguments are compatible, so you may not always see the expected combination of types. The connection types are: -v displays only voice connections. -d displays only data connections. -f displays only frame relay connections. -abit shows A-bit (nni) status. -fabit shows connections with failed A-bit (nni) status. -fail shows only failed connections -g shows only grouped connections -siw shows service interworking connections. -atfr shows only network interworking connections.
+d	Causes the display to show the user-configured descriptor for the connection instead of the compression and ownership fields.

resetad

Directs an access device to reset itself from a node terminal. The reset initiated by **resetad** is a cold-boot start of the access device. (The **restartad** command re-initiates the control session between the node and the access device.)

Full Name

Reset access device

Syntax

resetad <slot.port>.<Access Device ID>

Related Commands

restartad, dspads

Attributes

Privilege	1–3
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

Table 15-12 resetad–Parameters

Parameter	Description
slot.port	Specifies the slot and port number that connects to the access device.
access device_ID	Specifies the access device ID number. The range for the access device_ID is 1–255. Access devices on the same trunk are assigned in increasing order.

restartad

Restarts an access device session from a node's command terminal. The **restartad** command restarts the control session of an access device on an IPX or IGX node. A control session is first established when the following conditions are true:

- 1 You add an access device to the node with **addad**.
- 2 The port speed and other parameters on the device and the port match.

Once a control session is established, you can configure and manage the access device by commands you issue at the node. These commands are the access device commands in this chapter and the other, common commands in this manual.

The **restartad** command does not perform a hard reset of the access device itself. See **resetad** regarding a hard reset of the access device.

Full Name

Restart access device

Syntax

restartad <slot.port>.<Access Device ID>

Related Commands

resetad, dspads

Attributes

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

Table 15-13 restartad–Parameters

Parameter	Description
slot.port	Specifies the slot and port number.
access device_ID	Specifies the access device ID number. The range for the access device_ID is 1–255. Access devices on the same trunk are assigned in increasing order.

FastPAD Commands

FastPAD Command Introduction

The FastPAD commands are a set of commands concerned with configuring a FastPAD multiplexer for interconnection via your IPX network. FastPADs are interconnected via IPX Frame Relay Service PVCs. FastPAD/IPX interconnection requires the use of an FTC front card and FTI back card on the IPX. The FastPAD is connected to the FTI card installed in the IPX. The FRP/FRI cards provide the adaptation layer to convert data between Frame Relay format and IPX FastPacket format. In addition, since the Frame Relay/FastPAD connectivity is an option, this option must be enabled for your system software.

The FastPAD acts as a feeder into the IPX. The FastPAD encapsulates this traffic into FastPAD type frames and transmits it over frame relay PVCs. These PVCs are transmitted over a FastPAD trunk that feeds into an IPX frame relay port on an FTC/FTI card set. FastPAD connections are mapped to frame relay virtual circuits within the IPX, switched to the remote IPX, and delivered to the remote FastPAD.

There are five types of FastPAD connections: switched voice connections, permanent voice connections, data connections, frame relay connections, and frame forwarding connections. FAX connections are not a separate connection type. They are transmitted over switched voice or voice connections. When a FAX connection is required, the FastPAD automatically detects the FAX transmission and suppresses the use of any voice compression algorithms. A voice, data, or FAX connection from one FastPAD must always terminate on another FastPAD. Frame relay and frame forwarding traffic may be terminated on another FastPAD or on an FRP in an IPX.

The FastPAD connects to an IPX via an FTC/FTI card set on the IPX, where the FTC is the front card and the FTI is the back card. There are four types of FTI back cards: V.35, X.21, T1, and E1.

Initial FastPAD configuration is performed at the FastPAD with either the StrataView FastPAD, FastPAD FP Tools, or by replacing the FastPAD FlashPak. Following this, the FastPAD composite link (to the IPX) configuration and connection configuration is performed by using the IPX commands described in this appendix.

FastPAD Description Summary

The FastPAD always contains a base card and may also contain expansion cards. The base card is designated “b”, while the expansion cards are designated 1-5 for the FastPAD Micro and 1-8 on the standard FastPAD. The expansion ports can contain either Voice FAX Cards (VFC-03) or Frame Relay Access Modules (FRAM-01).

The base card on the FastPAD Micro supports a composite port for connection to the IPX, one high-speed data port, one low-speed data port, and an NMS port (for a PC running the StrataView FastPAD NMS application). The base card on the standard FastPAD supports a composite port for

connection to the IPX, one high-speed data port, five low-speed data ports, and an NMS port (Figure 16-1). When adding connections to the FastPAD base card ports, the letter “b” is used for slot designation. When adding connections to the FastPAD expansion cards, a number 1 through 8 is used, as applicable.

Voice connections are supported by adding VFC-03 cards. Each VFC-03 card provides the choice of connecting to either a RJ45 or RJ11 connector. On the VFC-03, there are three available modes selectable by software: Off Premise Extension (OPX), Single Line Telephone (SLT), and E & M. The VFC-03 supports Adaptive Transform Coding (ATC) voice compression algorithm. The VFC-03 supports other voice compression algorithms, e.g., CELP. The VFC-01 may not be installed in the same chassis as the VFC-03, and its operating mode must be manually switched between OPX, SLT, and E & M.

The Frame Relay Access Module (FRAM-01) provides three high-speed data ports in addition to the one on the base circuit card. The FRAM has a single DB-68 connector which can be converted to three DB-25 connectors through the use of an adapter cable.

There can be multiple FRAMs, however only one can be configured for a Frame Relay switch. The others can only be used for data connections. On the FRAM used for Frame Relay connections, one port is configured for a composite port, and the other two ports are configured to interface to CPE such as routers with frame relay interfaces, for example (Figure 16-2). One of the ports on the FRAM is used for a composite port since the baseboard composite port data rate is considerably slower. If a FRAM port is defined as the composite port (line interface to the IPX), the base board composite port (line) is disabled.

Figure 16-1 FastPAD Connection Configurations except Frame Relay

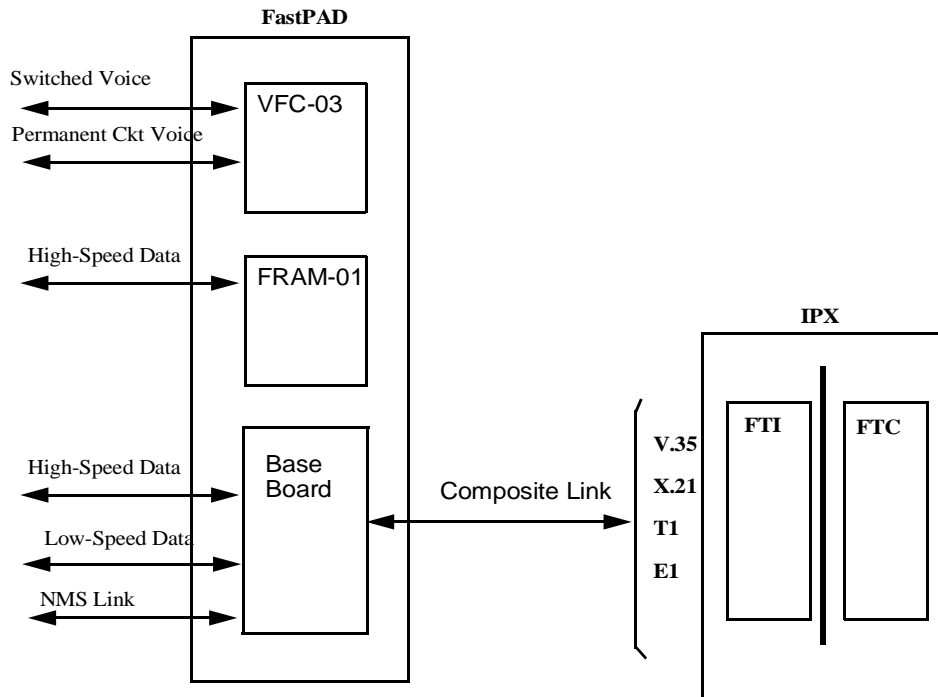
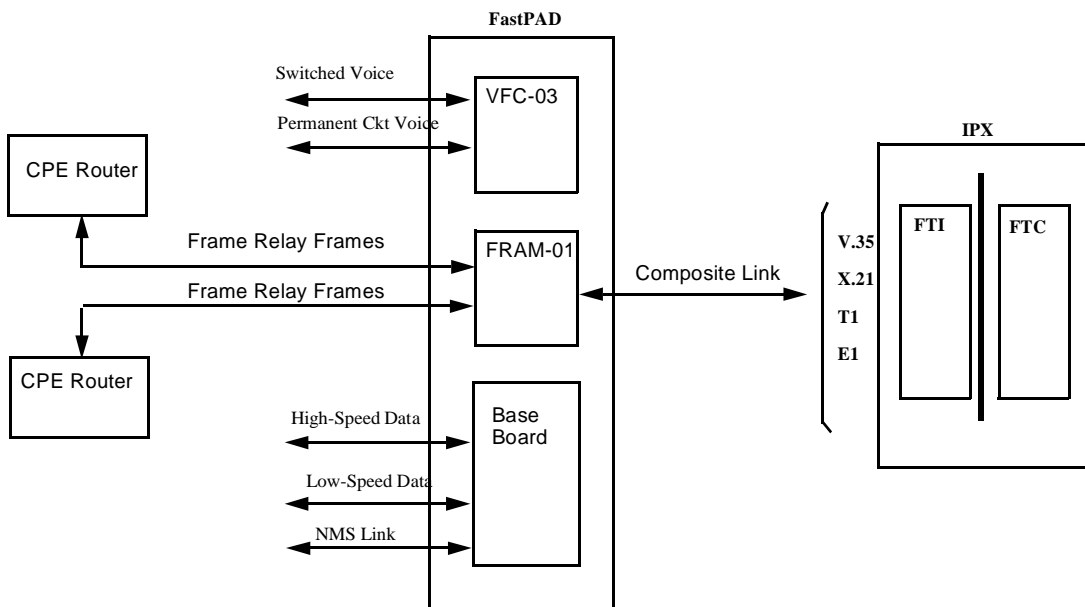


Figure 16-2 FastPAD Connection Configurations including Frame Relay



Configuration Summary

In setting up FastPAD connections across a network, a number of tasks need to be performed. These include the following:

- Install the FTC card.
- Set up Frame Relay parameters for the composite link between the FTC and the FastPAD.
- Configure the V.35 and X.21 ports, as necessary.
- Up and configure the T1/E1 ports, as necessary.
- Configure the composite link between the IPX and the FastPAD.
- Add the FastPAD to the local IPX node.
- Set up the appropriate connections: switched voice, permanent voice, CELP voice, low-speed data, high-speed data, frame relay, or frame forwarding.
- Manage the Bandwidth requirements.

General Considerations

Y-Cable Redundancy

The Y cable redundancy feature is supported for the FTC card, using the **addyred**, **delyred**, **dspyred** and **prtyred** commands. See the Node Commands chapter for details on setting up redundancy. The FTC/FTI card set supports V.35, X.21, T1, and E1 ports by the use of the corresponding four different FTI back cards

Managing FTC T1 and E1 Ports

Logical frame relay ports are collections of DS0 timeslots that function as a port. They support up to 252 connections. The LMI signalling protocol is simultaneously supported on a maximum of 30 logical ports.

The **addftcport** and **delftcport** commands are used to create/delete logical ports. The **addftcport** command associates a line number and DS0 timeslot to a logical port. Any number of contiguous DS0 timeslots are optionally associated to form a logical port with the restriction of channel 16, which is used for signalling for E1. Logical ports are formed with DS0 timeslots configured for either 56 or 64 Kbps. The **cnfftport** command may be used to configure the port.

Line Management for FTC T1 and E1 Lines

FTC circuit line operations are included in the commands **upln**, **upcln**, **dnln**, and **dncln**. An FTI line can be configured as a network clock source with the command **cnfelksrc**.

Unassigned Channel Signaling

Unassigned channel signals are transmitted on a channel which is not mapped to a logical port. Data code values axon and TX apply to the T1 and E1 channels. Signalling values 1111 and 1101 apply to T1/E1 ABCD signaling channels.

IGX/IPX and FastPAD Control Setup

The FastPAD can be monitored and managed by the IPX or the IGX through a control connection. This connection is a frame relay PVC connection between the CC on the IPX and the configuration application on the FastPAD. To configure the control connection:

- 1 Use the **dspftcport** command to display the FTC port parameters. Verify that the parameters of the FTC port (speed, clocking, port queue depth, ECN queue depth, and update protocol ID) match those of the FastPAD trunk port.
- 2 Use the **addfp** command to add a FastPAD to the local IPX or IGX node. With this command, specify the slot and port of the FTC or FTM card connected to the FastPAD, a name for the FastPAD, FastPAD ID, and the source DLCI (used to communicate with the FastPAD).

Initial Setup of FTM or FTC card and FastPAD Link

This section describes the steps for setting up the FTC card and FastPAD link.

- 1 Activating the FTC or FTM port providing the link to the FastPAD.

The ports on the FTC or FTM card for V.35 and X.21 interfaces are upped automatically. The ports for T1 and E1 cards must be added using the **addftcport** command. The T1 and E1 ports are configured for logical channels by specifying groups of DS0s. If the port is not up, use the **upftcport** command to up it.

- 2 Configuring an FTC or FTM port with the **cnfftport** command. If the port is not up, use the **upftcport** command to up it. For Release 8.1 and above, the **cnfftport** command includes the DE threshold. For Release 9.1 and above, the number of FastPADs and Access Devices per FTM/FTC card is increased from 31 to 63. Note, however, that each FTM/FTC card is still limited to 252 connections, which averages to 4 connections per device for an FTM/FTC with 63 Access Devices attached to it.

There are two separate sets of syntax parameters, one for all ports except T1/E1 ports and the other for T1/E1 ports. In summary these are:

For non-T1/E1 ports (e.g., V.35, X.21)

```
cnfftport FTC_slot.port speed port_type port_ID port_Q_depth
          ecnq_thresh DE_thresh signalling_protocol
```

For T1/E1 ports, after adding the logical ports with the **addftcport** command, configure each port:

```
cnfftport FTC_slot.port txq_depth ecnq_depth DE Threshold
          updt_prot_id
```

- 3 The next step is linking the FastPAD to the IPX or IGX. Once an FTC or FTM port has been configured, the FastPAD can be linked to the IGX or IPX using the **addfp** command:

```
addfp FTC/FTM_slot.port name ID source_DLCI
```

where **name** is up to eight characters to identify FastPAD, and **ID** must match the value entered at the FastPAD front panel (source DLCI = [S x 16] + P). Note that if an FTM or FTC card already has 64 devices attached to it, the **addfp** command will fail even if the port has no device attached to it. The command displays an error message.

Note Once communications have been established between the IGX or IPX and a FastPAD, the FastPAD is locked. The FastPAD may be unlocked with a power reset or reboot. Communications must be re-established after changes have been made locally on the FastPAD. This can be done with the **restartfp** command.

Line Management

The **upln** and **dnln** commands are used to bring the line up and down, respectively.

Feeder Management

1 Managing the FastPAD

- The **dsfp** command displays the status of the cards in a FastPAD including expansion cards.
- The **resetfp** command resets the FastPAD. This should be done with caution, as traffic is interrupted.

2 Configuring FastPAD Data Ports

Two commands are used to configure FastPAD data ports. These are **cnfdclk** and **cnfict**. **cnfdclk** sets the data mode (transparent, H/SDLC, or asynchronous) and the clock mode (internal or external). **cnfict** allows limited control lead mapping from one data port to another.

Note The **cnfdclk** and **cnfict** commands are used to configure the parameters most often changed by the user. The superuser command **cnffport** allows changing of all FastPAD data port parameters.

3 Configuring FastPAD Voice Ports and Channels

Two commands are used to configure FastPAD voice ports and connections. These are **cnfvchtp** and **cnfchgn**. The **cnfvchtp** command defines interface type, signalling, SLT timeout period, and DTME detect timeout. The **cnfchgn** command configures the input gain and output gain values.

Note The **cnfvchtp** and **cnfchgn** commands are used to configure the parameters most often changed by the user. The superuser command **cnffport** allows changing of all voice channel parameters.

4 Configuring and Displaying FastPAD Frame Relay Ports. Frame Relay connections can be made between a FastPAD and another FastPAD via FTCs over an IPX network, or between a FastPAD via an FTC over an IPX Network to an FRP termination on an IPX. FastPAD frame relay ports are configured on the FRAM-01 card. Typically, of the three ports on the FRAM-01 card, up to two may be connected to Frame Relay routers, and the third is used as the composite link to the IPX. Multiple FRAM-01 cards may be installed, but only one may be configured with Frame Relay ports for Frame Relay connections. Applicable commands for configuring and displaying FastPAD Frame Relay ports on a FRAM-01 are: **cnffrport**, **dsprport**, **upfrport**, and **dnfrport**. Their syntax is summarized in the following:

```
cnffrport FTC_slot.port.FP_slot.port [port_speed rcv_clk_type
```



```

xmt_clock_type signalling_protocol protocol_parameters
data_coding

dspfrport FTC_slot.port.FP_slot.port

upfrport   FTC_slot.port.FP_slot.port

dnprport   FTC_slot.port.FP_slot.port

```

Setting Up FastPAD Switched Voice Connections

Before two FastPADs can establish switched voice connections, they must be paired or associated to each other. Once paired, a PVC is created within the two FastPADs. Switched voice connections or sessions are established over this PVC. Each switched voice session does not have a dedicated PVC. Any FastPAD voice channel that has not been assigned a dedicated or permanent voice connection can be used for a switched voice connection. To set up a FastPAD switched voice connection:

- 1 First configure the voice channel at each FastPAD. The channel is expressed as `FTC_slot.port` where `FTC_slot` is the FTC card slot and `port` is the FTC port connected to the FastPAD. The configurable parameters and their associated commands are as follows:

cnfchgn	Configures the channel gain. This command allows the gain inserted in the receive and transmit directions to be adjusted to between -31 dB to +6 dB in 1 dB increments.
cnfchutl	Configures the channel utilization. See the Routing and Bandwidth commands chapter.
cnfvfchtp	Configures the FastPAD voice channel interface type. This command configures the telecommunications interface type.

- 2 Use the **addcon** command.

Setting Up FastPAD CELP 8K or CELP 4.8K Voice Connections

Rel. 9.1 supports CELP-based voice connections that terminate on a pair of VCF03s and CELP-based switched voice connections between a pair of FastPADs. The compression type, e.g., CELP 8k is not configurable from the IPX.

FastPAD Data Rate Summary

FastPAD Data Traffic

The base board low-speed data ports support the following:

- Asynchronous rates between 300 and 9600 bps
- Synchronous data rates between 1.2 and 19.2 kbps
- DCE RS-232 Interface

The base board high-speed data port supports the following:

- Synchronous data rates between 1.2 and 64 kbps
- DCE or DTE compatibility

- RS-232, RS-449, V.34, and V.11 interfaces

The optional FRAM high-speed ports support the following:

- Synchronous data rates between 1.2 and 512 kbps
- DCE or DTE compatibility
- RS-232, RS-449, V.35, and V.11 interfaces
- Frame Relay Traffic (one port used for connection to IPX, two used for connection to CPE)

Setting Up FastPAD Permanent Voice Connections

To set up a permanent FastPAD voice connection, you merely pair two FastPAD voice channels.

- 1 First configure the voice channel at each FastPAD. For permanent voice connections, the channel is expressed as `FTC_slot.port.FP_slot`, where `FTC_slot` is the FTC card slot; `port` is the FTC port connected to the FastPAD; and `FP_slot` is the voice expansion card slot on the FastPAD. The configurable parameters and their associated commands are as follows:

cnfchgn	Configures the channel gain. This command allows the gain inserted in the receive and transmit directions to be adjusted to between -31 dB to +6 dB in 1 dB increments.
cnfchutl	Configures channel utilization. See the Routing and Bandwidth Commands chapter.
cnfvfpchtp	Configures the FastPAD voice channel interface type. This Command configures the telecommunications interface type.

- 2 Use the **addcon** command. The above configuration must have been completed at each end before the connection can be added.

Setting Up FastPAD Data Connections

To set up a permanent FastPAD data connection, perform the following tasks.

- 1 First configure the data channel at each FastPAD. The channel is expressed as `FTC_slot.port.FP_slot.port`, where `FTC_slot` is the FTC card slot; `port` is the FTC port connected to the FastPAD; `FP_slot` is the card slot on the FastPAD; and `port` is the data channel on the FastPAD card. The configurable parameters and their associated commands are as follows:

cnfcondsc	Configures the connection descriptor.
cnfdclk	Configures the clocking for the data channel.
cnfict	Configures the interface control template that determines the output lead behavior for data channels. Output leads can be configured as steady state (on or off) or can be programmed to follow an input lead. For the FastPAD, there is only one template—the active template.
cnfchutl	Configures channel utilization. See the Routing and Bandwidth Commands chapter.

- 2 Use the **addcon** command. The above configuration must have been completed at each end before the connection can be added.

Setting Up Normal Frame Relay Connections

The FastPAD, in conjunction with the IPX, provides frame relay connections of CPE (routers, bridges, packet switches, etc.) via PVCs. The CPE is connected to the FRAM-01 card that supports Frame Relay. The FTI back card (V.35, X.21, T1, or E1) performs the adapter layer function to convert between the FastPAD special frame format and FastPackets.

The CPE transmits data to the FRAM-01 based upon the core functions of Q.922 (LAPD). The FastPAD scans the first two octets of the DLCI and forwards the frame to the destination CPE via the IPX.

For adding/deleting connections, the following commands are used:

- addcon
 - delcon
- 1 Use the **addcon** command to add the desired frame relay connections to the FRAM-01 card, using the appropriate frame class and configuring the bandwidth parameters as applicable.

```
addcon local_chan(s) node chan class [frp_bw avoid]

chan(s) = FTC_slot.port.FP_slot.port.DLCI

frp_bw = MIR/MIR VC-Q/VC_Q PIR/PIR Cmax/Cmax ECNQ_thresh/ECNQ_thresh
        QIR/QIR FST %util/%util
```

Note These parameters have the same value options as defined for the **cnfrcls** command currently supported for FRP ports.

```
delcon channel(s)

channels = FTC_slot.port.FP_slot.port.DLCI
```

- 2 For a large number of connections with similar bandwidth configuration, it may be useful to use the **cnfrcls** command to set up a class of frame relay bandwidth parameters applicable to these connections. See also **dspfcls**.

Frame Forwarding Connections

Frame forwarding connections allow the connection of non-frame relay frames (HDLC and SDLC). Frame forwarding for FastPAD to FastPAD may be configured on either the FastPAD base card or FRAM-01 expansion card. However, for Rel. 9.1, frame forwarding from FastPAD to FRP is limited to the data ports on the FRAM-01 expansion card.

NOTE: The FTC port ID cannot be changed to a different value if a frame forwarded connection exists between the attached FastPAD and an FRP. This is because the FTC port ID is used as a unique identifier in the FTC card's logical connection entry.

Managing Bandwidth

The following commands assist in managing bandwidth to achieve satisfactory traffic patterns.

- cnfcos** Specifies a class of service (COS) for a data or voice channel. The COS is a number from 0 to 15 that determines the channel's priority for rerouting in a trunk fails.
- cnfpref** Specifies preferred routing for intra-domain connections. This command can be used to assist in balancing the load on the network's trunks.
- dsprts, prtrts** Displays/prints the current connection routing information. Used in conjunction with the **cnfpref** command. The display of the connection routes terminates at the IPX.
- dncon, upcon** Temporarily downs/ups 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.

Monitoring Alarms and Statistics

- 1 Displaying Alarms. The **dspalms** command display includes failed connections and card failures. Line alarms are mapped to FTC port/FastPAD alarms. LMI failures show minor alarms on connections.
- 2 Statistics: For Release 9.1, FastPAD level statistics are not integrated in the IPX's statistics collections. The FTC card does collect statistics on the PVCs associated with the feeder channels within the IPX. The following statistics are available:

Frames received and transmitted, packets received and transmitted, bytes received and transmitted, receive and transmit frames discarded, receive and transmit packets discarded, and receive and transmit bytes discarded.

Applicable commands are: **cnfchstats**, **dspchstats**, **clrchstats**, **dspchstatscnf**, **dspchstathist**. The format is the same as in previous releases, except that the target frame relay port is specified as:

```
FTC_slot.port.FP_slot.port.DLCI
```

General FastPAD Information

FastPAD Data Types

There are three data channel types and one Frame Relay Type on the FastPAD (Figure 16-3).

Table 16-1 Port and Channel Types

Port Type	Transparent	H/SDLC	Asynchronous	Frame Relay
Base-board low speed	Yes	Yes	Yes	No
Base-board high speed	Yes	Yes	No	No
FRAM high speed	No	Yes	No	Yes

Transparent: The transparent mode is used for synchronous data applications. In order to reduce bandwidth utilization on the Composite Link, the FastPAD suppresses repeating patterns. After a synchronous data frame is built, the FastPAD searches for repeating patterns within the frame. The first occurrence of a repeating pattern of at least five in length is reduced to three octets and the smaller frame if sent out across the Composite Link. This process is called Run Length Compression (RLC).

H/SDLC: High-level Data Link Control (HDLC) and Synchronous Data Link Control (SDLC) are synchronous data protocols. SDLC is a subset of HDLC that was developed for use on SNA networks. The FastPAD recognizes HDLC frames and arranges them into 65 byte segments to be packetized into frame relay frames. All HDLC frames are separated by hexadecimal 7E flags. The FastPAD suppresses inter-HDLC frame idle flags to reduce utilization on the composite link.

Async: In asynchronous mode, the data channel protocol is preset to 8-bit characters with no parity and one stop bit, which cannot be changed. However, 7-bit protocols with parity can be used and the FastPAD forwards the parity bit as the eighth data bit. In order to reduce bandwidth use, frames are not generated during idle periods, and start and stop bits are not included in the frame. There is a configurable time period that the FastPAD waits to receive data from an asynchronous device before sending a frame that is 66 bytes long. This ensures propagation through the network with minimal delay.

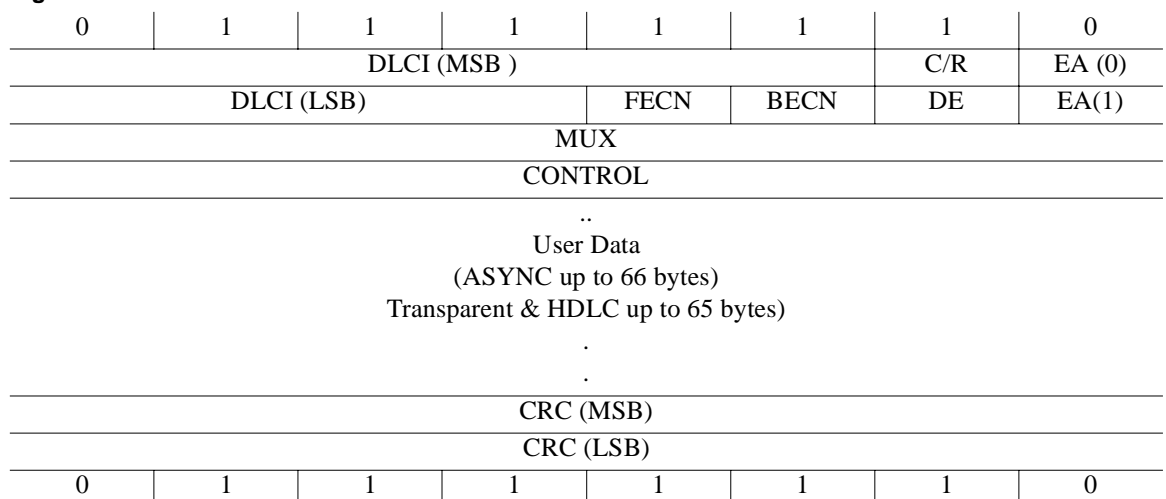
Data Frame Format

The data traffic on the composite link of the FASTPAD is encapsulated into frames. FastPAD frames with synchronous data contain 65 data bytes, and frames with asynchronous data contain data bytes. Data frames may be shorter in some cases. Data frames may be marked as discard eligible.

The composite link can connect a FastPAD to a wide area network (e.g. IPX) or to another FastPAD. The Frame Relay network can be either public or private.

The standard frame relay format is shown in Figure 16-3. The standard frame relay format can be between 5 and 4096 bytes in length. There is at least one hex 7E lag between consecutive frames. On the composite link, the frame lengths used by the FastPAD can have up to 65 bytes of synchronous data, 66 bytes of asynchronous data, or between 5 and 4096 bytes of frame relay connection data.

Figure 16-3 FastPAD Frame Format



Summary of Commands

The commands discussed in the previous sections are summarized in the Table 16-2. The command name, a description, and the page on which more information can be found is included.

Table 16-2 Summary of Commands

Mnemonic	Description
addcon	Add Connection
addfp	Add FastPAD to IPX Node
addfpdial	Add FastPAD Speed Dial Number
addftcport	Add logical T1/E1 port link to FastPAD, using DS0 segments
addextlp	Add external loop. See the “Troubleshooting” chapter.
addrmtlp	Add remote loop. See the “Troubleshooting” chapter.
cnfchgn	Configure Gain Insertion for Channel(s)
cnfchpri	Configure FRP channel priority for a connection, supporting SNA applications
cnfchutil	Configure channel utilization for a channel. See the “Optimize Traffic Routing” chapter.
cnfcos	Configure class of service. Sets priority for rerouting a connection. See the “Optimize Traffic Routing” chapter.
cnfdclk	Configure Data Clock
cnffrcls	Configure frame class parameters for FastPAD to FastPAD or FastPAD to FRP frame relay connections via FRAM-01 card.
cnffrcon	Configure FastPAD to FastPAD or FastPAD to FRP frame relay connections via FRAM-01 card.
cnffrport	Configure Frame Port for FastPAD to FastPAD or FastPAD to FRP frame relay connections via FRAM-01 card.
cnfftcport	Configure FTC Port
cnfict	Configure Interface Control Template
cnfpref	Configures preferred route. See the “Optimize Traffic Routing” chapter.
cnfvchtp	Configure FastPAD Voice Channel Type
cpyict	Copy Interface Control Template
delcon	Delete Connection
delfp	Delete FastPAD from IPX or IGX Node
delftcport	Delete logical T1/E1 port
dncon	Down a connection. See the “Optimize Traffic Routing” chapter.
dnfrport	Down Frame Port on FRAM-01 for FastPAD to FastPAD or FastPAD to FRP frame relay connections, using syntax FTC_port.slot.FP_slot.port
dnftcport	Down FTC port for link to FastPAD composite port using syntax FTC_slot.port.
dnln	Down an FTC line
dspchcnf	Display Channel Configuration
dspecon	Display Connection
dspecons	Display Connections
dspf	Display FastPAD Card Information
dspfps	Display Information for All FastPADs

Mnemonic	Description
dspfcls	Display frame class parameters for FastPAD to FastPAD or FastPAD to FRP frame relay connections via FRAM-01 card.
dspfport	Display Frame Port configuration on FastPAD FRAM-01.
dspfctport	Display FTC Port Configuration
dspict	Display Interface Control Template
dsprts	Displays routes used by connections at a node. See the “Optimize Traffic Routing” chapter.
prtchcnf	Print Channel Configuration
prtcons	Print connection(s)
prtict	Print Interface Control Template
resetfp	Reset FastPAD: do a cold boot and allow deletion of all PVCs.
restartfp	Restart FastPAD(s)
tstcon	Test Connection with a test pattern. See the “Troubleshooting” chapter.
tstdelay	Test round trip delay. See the “Troubleshooting” chapter.
tstport	Test Port, executing port loopback test. See the “Troubleshooting” chapter.
upcon	Up a connection that has been downed. See the “Optimize Traffic Routing” chapter.
upfrport	Up Frame Port on FRAM-01 for FastPAD to FastPAD or FastPAD to FRP frame relay connections, using syntax FTC_port.slot.FP_slot.port
upftcport	Up FTC port for link to FastPAD composite port using syntax FTC_slot.port.
upln	Up an FTC line.

addcon

Adds channel connections between entities in the network. The same command with differing syntax may be used to add voice connections, data connections, frame relay connections or FastPAD voice, switched voice, or data connections. This command establishes channel connections between entities in the network. This format of the command adds a FastPAD voice, switched voice or data connection. The same command with differing syntax can be used to add different types of network connections. After a connection is added with the **addcon** command, the connection is routed automatically by the system.

The node where the **addcon** command is entered is considered the “owner” of the added connections. The concept of ownership is important because automatic rerouting and preferred routing information for a connection must be entered from the node that owns the connection. See the **cnfpref** and **cnfcos** commands for more information on automatic rerouting. Before a connection is added, the proposed connection appears on the screen and you are asked to confirm the addition.

Switched Voice: addcon FTC_slot.port Access Device ID.Connection ID node FTC_slot.port
 Access Device ID.Connection ID type [BW] [% utl]

 where BW = MIR

Auto-Dial Voice: addcon FTC_slot.port.Access Device ID.Connection ID node FTC_slot.port
 Access Device ID.Connection ID slot type

Data: addcon FTC_slot.port.Access Device ID.Connection ID FP_slot.port.Access
 Device ID.Connection ID node FTC_slot.port.FP_slot.port rate

Frame: [params] addcon FTC_slot.port.FP_slot.port.DLCI node
 FTC_slot.port.FP_slot.port.DLCI

Full Name

Add a connection

Syntax

addcon parameters optional parameters

Related Commands

delcon, dncon, dspcon, dspcons, upon

Attributes

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

Example 1

```
addcon 31.1.8 IPX 31.2.8 0 5 atc12
```

Description

Add a voice connection from FastPad port 31.1.8 to 31.2.3 with a connection ID of 5 that uses ATC12 compression. When prompted, type “y” to add the connection.

System Response

IPX	TRM	SuperUser	IPX	32	9.1	Date/Time	Not Set
Local Channel	Remote NodeName	Remote Channel	State	Type	Compression	Code	Route Avoid COS O
31.1.8	IPX	31.2.8	Ok	atc12			
31.2.8	IPX	31.1.8	Ok	atc12			

This Command: addcon 31.1.8 IPX 31.2.8 0 5 atc12

Add these connections (y/n)?

Table 16-3 addcon – Parameters

Parameter	Description										
<i>local channel</i>	<p>Specifies the local frame relay channel to connect in the following format:</p> <table border="0"> <tr> <td>FTC_slot.port</td> <td>For switched voice connections</td> </tr> <tr> <td>FTC_slot.port.FP_slot</td> <td>For voice connections</td> </tr> <tr> <td>FTC_slot.port.FP_slot.port</td> <td>For data connections</td> </tr> <tr> <td>FTCslot.port.FPslot.subport.DLCI</td> <td>For frame relay connections</td> </tr> </table> <p>In these formats, <FTC_slot> indicates the slot of the FTC card on the IPX, <port> is a port on the FTC card, <FP_slot> is the card slot on the FastPAD and <port> is the port or channel of the FastPAD data card. The <FPslot> range includes b and 1 - 8, with b being the base card and 1-8 the expansion cards. On the standard FastPAD, the base card provides six data channels; channels 1-5 are low speed, and channel 7 is high speed. Channel 6 is for NMS. Other expansion data cards (FRAM-01) provide three channels (1 - 3). One of these 3 channels can be use for the composite link. Also, on one FRAM-01 only, two of these channels can be used for Frame Relay connections. See Example 2, Fr Rly. A VFC-03 expansion card provides for voice connections.</p>	FTC_slot.port	For switched voice connections	FTC_slot.port.FP_slot	For voice connections	FTC_slot.port.FP_slot.port	For data connections	FTCslot.port.FPslot.subport.DLCI	For frame relay connections		
FTC_slot.port	For switched voice connections										
FTC_slot.port.FP_slot	For voice connections										
FTC_slot.port.FP_slot.port	For data connections										
FTCslot.port.FPslot.subport.DLCI	For frame relay connections										
<i>node</i>	Specifies the name of the IPX node at the other end of the connection.										
<i>remote channel</i>	<p>Specifies the remote FastPAD channel or destination channel of the connection. It is specified in the same format as:</p> <table border="0"> <tr> <td>FTC_slot.port</td> <td>For switched voice connections</td> </tr> <tr> <td>FTC_slot.port.FP_slot</td> <td>For voice connections</td> </tr> <tr> <td>FTC_slot.port.FP_slot.port</td> <td>For data connections</td> </tr> <tr> <td>FTCslot.port.FPslot.subport.DLCI</td> <td>For frame relay connections</td> </tr> </table>	FTC_slot.port	For switched voice connections	FTC_slot.port.FP_slot	For voice connections	FTC_slot.port.FP_slot.port	For data connections	FTCslot.port.FPslot.subport.DLCI	For frame relay connections		
FTC_slot.port	For switched voice connections										
FTC_slot.port.FP_slot	For voice connections										
FTC_slot.port.FP_slot.port	For data connections										
FTCslot.port.FPslot.subport.DLCI	For frame relay connections										
<i>type</i>	<p>Specifies the type of the connection. For switched voice connections, the type is “s” or “switch” to indicate the PVC is used for switched voice. For voice, type indicates the compression type. The following voice compression types are valid: ATC8, ATC12, ATC16 and CELP8, indicating ATC compression at 8K, 12K, or 16K and CELP compression at 8K. For data connections, the type is the data rate. The following Kbps values are valid:</p> <table border="0"> <tr> <td>Base board low-speed ports:</td> <td>Asynchronous rates between 300 and 9600 bps.</td> </tr> <tr> <td></td> <td>Synchronous rates between 1.2 and 19.2 Kbps</td> </tr> <tr> <td>Base board high-speed ports:</td> <td>Synchronous rates between 1.2 and 64 Kbps</td> </tr> <tr> <td>FRAM-01 expan. card:</td> <td>Synchronous rates between 1.2 and 512 Kbps</td> </tr> <tr> <td>Frame Relay Class:</td> <td>1–10</td> </tr> </table>	Base board low-speed ports:	Asynchronous rates between 300 and 9600 bps.		Synchronous rates between 1.2 and 19.2 Kbps	Base board high-speed ports:	Synchronous rates between 1.2 and 64 Kbps	FRAM-01 expan. card:	Synchronous rates between 1.2 and 512 Kbps	Frame Relay Class:	1–10
Base board low-speed ports:	Asynchronous rates between 300 and 9600 bps.										
	Synchronous rates between 1.2 and 19.2 Kbps										
Base board high-speed ports:	Synchronous rates between 1.2 and 64 Kbps										
FRAM-01 expan. card:	Synchronous rates between 1.2 and 512 Kbps										
Frame Relay Class:	1–10										

Table 16-4 addcon – Optional Parameters

Parameter	Description
<i>avoid</i>	<p>Specifies the type of trunk for the connection to avoid. The default is no avoidance. The choices are:</p> <ul style="list-style-type: none"> *s avoid satellite trunks. *t avoid terrestrial trunks. *z avoid trunks using zero code suppression techniques that modify any bit position to prevent long strings of zeros.
<i>bandwidth</i>	Specifies the amount of bandwidth to dedicate to the voice channel. This parameter is optional and only valid for FastPAD switched voice connections.

Parameter	Description
<i>hop count bumping</i>	Specifies whether to use hop count bumping (adjustment) to improve the quality of the PVC carrying a switched voice connection. Bumping the hop count can lower the delay for the PVC. This parameter is optional and only valid for switched voice connections.
<i>utilization</i>	Specifies a utilization percentage to be used by the IPX for bandwidth assignment. This parameter is optional and only valid for switched voice connections.

addcon – FastPAD Frame Relay and Frame Forwarding Connections

Example 2

```
addcon 10.1.3.12.1000 beta 11.1.1.12.1001 10
```

Description

Add a frame relay connection between FastPADs.

System Response

```

gamma          TRM          YourID:1      Rev: 9.1.X      Mar 1 1997      PST

From           Rem           Rem           State   Type   Compression Code  COS
              RemName      Channel
10.1.3.3.990   beta         11.1.1.2.991  Downed  fr          10
11.1.1.100     beta         11.1.2.2.200  OK      fr          3
12.1.1.1.3     beta         10.1           OK      fr          2
    
```

```
Last Command: addcon 10.1.3.3.990 beta 11.1.1.2.991 10
```

```
Next Command:
```

FastPad to FastPAD frame relay connection:
addcon 10.1.2.3.990 beta 11.1.1.2.991 10

FRP port to FastPAD frame relay connection:
addcon 11.1.100 beta 11.1.2.2.200 3

Frame Forwarding, FastPAD data channel to
FRP port:
addcon 12.1.1.12.* beta 10.1.* 2

For frame relay connections, the **addcon** syntax is:

```
addcon local chan(s) node chan class [optional params = frp_bw avoid]
```

The frp_bw parameters have the same parameter values options as defined in the **cnffrcl** command for the frp ports. These are:

frp_bw = MIR/MIR VC_Q/VC_Q PIR/PIR Cmax/Cmax ECNQ_thresh/ECNQ_thresh
QIR/QIR %util/%util descr

avoid = s/z

local chan = the local FastPAD frame relay channel with format:

FTCslot.FRCport.FastPADsubslot.FastPADsubport[.DLCI | .*]

node = remote node name

chan = frame relay channel at the other end of the connection and has the following syntax

For FastPAD destination:

FTC_slot.port.FP_slot.port [.DLCI | .*]

For FRP destination:

FRP_slot.port [.DLCI | .*]

Note If the connection is from FRP port to FastPAD, reverse the chan and local channel parameters in this example.

class = Class of Service

addfp

Adds a FastPAD to the IPX network. This enables the local IPX to map the FastPAD to an FTC port and communicate with it over a frame relay PVC to establish a control session. The **addfp** command defines the IPX slot and port to which the FastPAD is connected and assigns the FastPAD a unique name and ID. (The name and ID must be unique to the local node, and ID must match the value entered at the control panel of the FastPAD). This command also assigns a source (FastPAD) DLCI to identify the PVC connection over which the devices communicate. If the port speed and related parameters on the FTC card match those of the composite link of the FastPAD, the IPX establishes a control session with the FastPAD, allowing configuration management to be performed over this session.

```
addfp FTC_slot.port name ID source_DLCI
```

Full Name

Add FastPAD to an IPX node

Syntax

```
addfp parameters
```

Related Commands

delfp, dspfp

Attributes

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

Example 1

```
addfp 31.1 FP1 1 17
```

Description

Add a FastPAD at slot port 31.1, specifying the name FP1, an ID of 1, and a source DLCI of 17.

System Response

```
IPX          TRM   SuperUser      IPX 32    9.1    Date/Time Not Set
```

FastPADs Information

Slot.Port	Name	ID	FP_DLCI	Port_ID	Alarm
31.1	FP1	1	17	0	OK
31.2	FP2	2	18	0	OK
31.3	FP3	3	19	0	OK
31.4	FP4	4	20	0	OK

Last Command: addfp 31.1 FP1 1 17

Next Command:

Table 16-5 addfp – Parameters

Parameter	Description
<i>slot</i>	Specifies the slot containing the FTC card to which the FastPAD is to be added.
<i>port</i>	Specifies the port number on the FTC card to which the FastPAD is to be added.
<i>name</i>	Specifies the name of the FastPAD to be added to the node. This name must be unique to the local (physically connected IPX) node.
<i>id</i>	Specifies a value to be used as an identifier for the FastPAD. The value can be from 1 to 256 and must match the value entered into the FastPAD from the front panel. This value must be unique to the local (physically connected IPX) node.
<i>source dlci</i>	Specifies the DLCI used by the FastPAD to communicate with the local IPX node.

addfpdial

Adds a speed dial number to the FastPADs map table. The map table is used by the FastPAD to route a FastPAD end user's analog voice connection to the remote FastPAD channel. Number must be between 0 and 9999. If FFFF is specified, then no speed dial is set. For auto-dial voice channels, a specific map must be assigned to the calling channel.

```
addfpdial FTC_port.slot.FP_port dial number
```

Full Name

Add FastPAD speed dial number

Syntax

addfpdial parameters

Related Commands

None

Attributes

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

Example 1

```
addfpdial 31.2.8 777
```

Description

Add a speed dial number of 777 to FastPAD at 31.2.8

Table 16-6 **addfpdial – Parameters**

Parameter	Description
<i>channel</i>	Specifies the FastPAD channel to get a speed dial number
<i>dial number</i>	Specifies the phone number used by the local FastPAD. Number must be between 0 and 9999. If FFFF is specified, then no speed dial is set.

addftcport

Adds a logical frame relay port for T1/E1 by entering the slot number of the FTI/FTC and the DS0/timeslots that make up the logical port. Table 16-7 lists the error/warning messages from this command.

Table 16-7 addftcport Command Error Messages

Messages	Reason for Message
"Slot is out of range"	Line number not correct for FTC T1/E1
"Line must first be upped"	Line is down
"invalid channel range"	Channel number is out of range (T1: 1-24) or (E1: 1-31, no 16)
"Channel is busy"	Channel is already assigned to a logical port
"You cannot use signalling channel 16" (E1)	CAS channel 16 included in logical port (E1)
"Invalid rate"	Entered rate is not 56 or 64 Kbps
"This rate is available for single channel only"	Entered rate is 56 Kbps and multiple channels were specified

Full Name

Add FastPAD port T1/E1

Syntax

addftcport parameters optional parameters

Related Commands

upcln, delftcport, cnfftport, dspftcport

Attributes

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

Example 1

```
addftcport 21.9 -15
```

Description

Add a FTC port from a range of DS0/timeslots.

System Response

```
gamma          TRM   YourID:1          IPX 16      9.1.x      Mar. 15 1997 17:28 CST
```

```
Port configuration for FTC 21
```

<u>From</u>	<u>Chan</u>	<u>Speed</u>	<u>Interface</u>	<u>State</u>
1	9-15	448	FRI T1	INACTIVE

```
Last Command: addftcport 21.9-15
```

```
Next Command:
```

Table 16-8 addftcport – Parameters

Parameter	Description
<i>line.channel</i>	Specifies the FTI T1/E1 line number and the logical port number. e.g. addftcport 8.14 (a period separates the line from the logical port number).

Table 16-9 addftcport – Optional Parameters

Parameter	Description
<i>-chan</i>	Specifies that multiple DS0/timeslots should be aggregated into a logical port, e.g. addftcport 8.1 – 5 (a hyphen is used to separate the DS0/timeslots in a from – to range). The lowest DS0/timeslot number becomes the logical port number.
<i>rate</i>	Specifies the rate of a single logical port. By default, multiple ports are all 64 Kbps. A single DS0/timeslot may be 56 Kbps or 64 Kbps. e.g. addftcport 8.14 56 (if rate is not entered, 64 Kbps is assumed).

cnfchgn

Configures the amount of gain inserted by the IPX mode for the specified FastPAD voice channel. Gain can be configured between +6 dB and -8 dB. The input gain is inserted at the receive side of an FTC line, and is therefore applied before the signal is packetized. The output gain is inserted at the transmit side of a FTC line and is applied after the signal has been depacketized.

Full Name

Configure gain insertion for channels

Syntax

cnfchgn parameters

Related Commands

dspchcnf

Attributes

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

Example 1

```
cnfchgn 31.1.8 -4 2
```

Description

Configure an input gain of -4db and an output gain of +2db for FastPAD channel 31.1.8

System Response

```

IPX          TRM SuperUser      IPX 32    9.1    Date/Time Not Set

          %   Gain  (db)
Channels Util  In   Out  Interface Type  DTMF  SLT Timeout
31.1.8  100   -4   2    FXS L/S        30

```

Last Command: cnfchg 31.1.8 -4 2

Next Command:

Table 16-10 cngchg – Parameters

Parameter	Description
<i>channel(s)</i>	Specifies the FastPAD channel
<i>gain</i>	Specifies the gain, in decibels, to assign to the channel. The range is -8 dB to +6 dB.

cnfdclk

Configures the clocking for a FastPAD data channel. The FastPAD supports synchronous and asynchronous traffic. For synchronous traffic, the channel can support internal or external clocking. Asynchronous (character-oriented) traffic is sent as 8 bits, 1 stop bit, and no parity.

Note For a change of port type on an expansion card from frame relay to data (DLC), a prompt appears stating that the FastPAD must be reset. Use the resetfp command to do this.

Full Name

Configure data channel clocking type

Syntax

cnfdclk parameters optional parameters

Related Commands

cnfict

Attributes

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

Example 1

```
cnfdclk 31.2.B.2 TRANS i
```

Description

Configure clock for channel 31.2.B.2 for transparent data and an internal clock mode.

System Response

```

IPX          TRM   SuperUser      IPX 32   9.1   Date/Time Not Set

Data Channel: 31.2.B.2
Interface:    RS232      DTE
Clocking:     Internal

```

Interface Control Template for Connection while Active

Lead	Output Value	Lead	Output Value
DSR	ON	RTS	N/A
DCD	ON	CTS	ON

Last Command: cnfdclk 31.2.B.2 TRANS i

Next Command:

Table 16-11 cnfdclk – Parameters

Parameter	Description
<i>channel</i>	Specifies the data channel to configure. Data channels are specified in the format slot.port.subslot.subport, where slot and port are the slot/port of the FTC card, subslot is the FastPAD card slot (1-8 for expansion, b for the base card), and subport is the port/channel on a FastPAD data card. The base card supports six ports/channels (1-5 are low speed, 6 is high speed). Other data cards support three ports/channels (1-3).
<i>data mode</i>	Specifies the data transmission mode as either: <ul style="list-style-type: none"> • TRANS transparent data transmission • DLC H/SDLC data transmission • ASYNC Asynchronous data transmission
<i>clock type</i>	Specifies a clocking type to assign to each channel. Valid clock types are: <ul style="list-style-type: none"> • i Internal (FastPAD provides transmit/receive clocks.) • e External (FastPAD provides transmit/receive clocks.)

cnffrport

Configures the parameters of a frame relay port. When configuring a frame relay port on a FastPAD, the user is prompted for each parameter. Pressing the Return key keeps the current value for the parameter. The screen display is shaded for parameters not configurable for some applications. The data rates for each of the four ports may be mixed and matched freely if the total for all four ports does not exceed the maximum data rate allowed (up to 512 Kbps.)

The rules for assigning data rates to the four ports when using the 1 Mbps FRI are as follows:

- 1 If a data rate of 672 Kbps or above is used in any port, no other port may be used.
- 2 If a data rate of between 384 Kbps and 512 Kbps is used in any port, a second port may be used at an available data rate of 512 Kbps or below.
- 3 If a data rate of 336 Kbps is used in any port, two other ports may be used at any available data rates of 336 Kbps or below.
- 4 If the data rate of any port does not exceed 256 Kbps, all four ports may be used at any available data rates of 256 Kbps or below.

Full Name

Configure Frame Relay port

Syntax

(T1/E1 ports)

cnffrport Required parameters (left-to-right):

slot.logical port number	prot queue depth
ecn queue threshold	de threshold
signalling protocol	protocol parameters

Optional parameters:

None

Syntax

(All other ports)

cnffrport Required parameters (left-to-right):

slot.port number

Optional parameters:

speed	clocking
port type	port ID
prot queue depth	ECN q_threshold
de_threshold	signalling protocol
protocol parameters	min-flags-bet-frames

Related Commands

upfrport, dnfrport, dspfrport

Attributes

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

Example 1

```
cnffrport 5.1 256 NORMAL 0 65535 65535 100 2 N
```

Description

Reconfigure the FR port to 5.1 to change Q depths

System Response

```
D2.ipx5          TRM   YourID:1          IPX 16    9.1   Aug. 4 1997  16:40 PST

Port:           5.1                [ACTIVE ]
Interface:      FRI-X21 DCE        Configured Clock: 256          Kbps
Clocking:       Normal            Measured Rx Clock: 256        Kbps
Port Type      FR
Port ID        0
Port Queue Depth 65535
ECN Queue Threshold 65535
DE Threshold    100                %
Signalling Protocol None
Asynchronous Status No
T392 Polling Verif Timer15
N392 Error Threshold 3
N393 Monitored Events Count4
Communicate Priority No
Upper/Lower RNR Thresh75%/25%

OAM Pkt Threshold3pkts
T391 Link Intg Timer6sec
N391 Full Status Poll10cyl
ForeSight (CLLM)No
CLLM Status Tx Timer0msec
IDE to DE MappingYes
Interface Control Template
I
State
ON
```

```
Last Command: cnffrport 5.1 256 NORMAL 0 65535 65535 100 2 N
```

```
Next Command:
```

Example 2

```
cnffrport 8.1 256 n 12000 10000 100 4 15 3 4 N 75 25 1
```

Description

Reconfigure an NNI FR port 8.1 to change Q depths

System Description

gamma TRM YourID:1 IPX 16 9.1 Mar. 15 1997 15:51 PST

```

Port:      8.1      [ACTIVE ]
Interface: V35-4   DCE
Clocking:  Normal
Port ID    40
Port Queue Depth 12000
ECN Queue Threshold 10000
DE Threshold 100 %
Signalling Protocol Annex A NNI
Asynchronous Status Yes
Polling Verif Timer 15
Error Threshold 3
Monitored Events Count 4
Communicate Priority No
Upper/Lower RNR Threshold 75/25 %

Configured Clock:      256 Kbps
Measured Rx Clock:    256 Kbps

Min Flags / Frames      1
OAM FastPacket Threshold 3 pkts
Link Integrity Timer (T391) 6 secs
Full Status Polling (N391) 10 cycles

Interface Control Template
Lead      State
CTS      ON
DSR      ON
DCD      ON
    
```

Last Command: cnffrport 8.1 256 normal 12000 10000 100 6 15 3 4 N 75 25 1

Next Command:

The results for the update FR parameters as shown are as follows:

Port Queue Depth	65535	Depth of port queue is set at 65,535 bytes.
ECN Queue Depth	65535	Port queue must reach 65,535 bytes before FECN and BECN bits are set.
DE Threshold	100	Port buffer fill must be 100% before dropping DE frames.
Signalling Protocol	2	LMI disabled.
Asynchronous Status	N	No asynchronous messages to user device; wait for polling from user device.
Polling Verify Timer	15	15 seconds heartbeat period.
Error Threshold	3	3 failures trigger port comm failure.
Monitored Events Count	4	4 events are monitored.
Communicate Priority	N	Do not communicate port priority to the user device.
Upper RNR Threshold	75	75% of buffer triggers receiver not ready condition.
Lower RNR Threshold	25	25% of buffer clears a receiver not ready condition.
Minimum Flags/Frame	1	There is only one flag for each FR data frame.

Table 16-12 cnffrport – Parameters

<i>slot.p;ort</i>	Specifies the FRP card slot and port number. (Slot and logical port number for T1/E1)
<i>speed</i>	<p>Specifies the port clock speed in kbps; for a 2.0 Mbps FRP. Speed configured is displayed as Configured Clock. Actual clock rate is displayed as Measured Rx Clock. The available speeds are:</p> <ul style="list-style-type: none"> 1 port (selected speeds, 56 to 2048 Kbps) 2 ports (selected speeds, 56 to 1024 Kbps) 3 ports (selected speeds, 56 to 672 Kbps) 4 ports (selected speeds, 56 to 512 Kbps) <p>The available clock rates for the 1, 2, 3, and 4 port combinations are provided in the command description.</p>
<i>clocking</i>	<p>Specifies the port clock type (normal/looped) [normal]. There are four combinations of clocking that may be used for the FRI-V.35 and two with the FRI-X.21. Refer to Chapter 2, Frame Relay Interface Card for a description of looped and normal clock modes. Not specified for T1/E1 ports.</p> <ul style="list-style-type: none"> FRP is DCE with normal clocking (V.35 and X.21) FRP is DCE with looped clocking (V.35 only) FRP is DTE with normal clocking (V.35 and X.21) FRP is DTE with looped clocking (V.35 only)
<i>port type</i>	Specifies the port type as either FR for frame relay or ATM for Asynchronous Transfer Mode. Select ATM when using AIP to interface V.35 circuits to IPX FRP port. Configures alarm reporting and other miscellaneous functions for port.
<i>port ID</i>	Specifies the DLCI associated with the port (0 - 1024) {0}. The IPX uses this number only when adding bundled connections. Otherwise, it can be used by the customer as a network destination number in global addressing. Not specified for T1/E1 ports.
<i>port queue depth</i>	specifies the maximum bytes queued for transmission from the FRP port. The range is from 0–65535. The default is 65535.
<i>ecn queue threshold</i>	specifies the port explicit congestion notification. The range is from 0-65535. The default is 65535. This is the point at which the BECN and FECN bits will be set in the communications to the user device.
<i>de threshold</i>	Specifies the port queue depth above which frames with the Discard Eligibility bit set will be discarded. Valid entries are 0–100%, with a default of 100%. An entry of 100% effectively disables DE for the port.

<i>signalling protocol</i>	<p>Specifies the LMI operation mode. The range is from 0-255. The following values are defined (the default is LMI=2):</p> <p>LMI = 0 LMI is disabled at this port.</p> <p>LMI = 1 Cisco LMI and the asynchronous update process is enabled at this port. Greenwich Mean Time is also enabled</p> <p>LMI = 2 LMI is disabled at this port.</p> <p>LMI = 3 Cisco LMI is enabled at this port, but asynchronous update process is disabled.</p> <p>LMI = 4 Port configured as User-Network Interface using CCITT Q.933 Annex A parameters.</p> <p>LMI = 5 Port configured as User-Network Interface using ANSI T1.617 Annex D parameters.</p> <p>LMI = 6 Port configured as Network-Network Interface using CCITT Q.933 Annex A parameters.</p> <p>LMI = 7 Port configured as Network-Network Interface using ANSI T1.617 Annex D parameters.</p>
<i>asynchronous status</i>	<p>Specifies whether the IPX should send unsolicited LMI update messages as they appear or whether to wait for the polling from the user device. Valid values are y (yes) or n (no)</p>
<i>polling verify timer</i>	<p>Specifies the Link Integrity Verification Timer heartbeat (keep-alive) period with a valid range of 5–30. This should be set to 5 seconds more than the heartbeat time set in the user equipment. Default is 15.</p>
<i>error threshold</i>	<p>Specifies the number of failures in the monitored events that causes the "keep alive" process to report an alarm. It has an accepted range of 0-255 and a valid range of 1–10. A value of zero defaults to 1, and a value more than 10 defaults to 10.</p>
<i>monitored events count</i>	<p>Specifies the number of monitored events for the "keep alive" process. It has an accepted range of 0-255 and a valid range of 1-10. A port communication fail condition is cleared after this number of successful polling cycles. A value of 0 defaults to 1, and a value more than 10 defaults to 10.</p>
<i>communicate priority</i>	<p>Specifies whether the connections SNA priority (H or L) should be communicated to the user device attached to the port. Valid entries are y (yes) or n (no); default is no.</p>
<i>upper/lower RNR threshold</i>	<p>Specifies the receiver not ready thresholds. Upper threshold is the number of receiver not ready indications from the user equipment before alarm is generated for this port. The lower receiver not ready threshold is the number of indications from the user equipment before an alarm is cleared. Valid values are 1-255; defaults to 75 for upper, 25 for lower threshold.</p>
<i>min. flags/frame</i>	<p>Specifies the minimum number of flags between frames. All values greater than 0 are valid and the default is 1.</p>
<i>OAM FastPacket threshold</i>	<p>Specifies the OAM FastPackets are used within the local IPX network to transmit the NNI status from the remote network. This counter allows the user to define the number of dropped OAM packets before setting A-bit transmitted to the user device to 0 to indicate connection failure. This can be set from 0 to 15 packets and the default is 3 packets. A 0 disables this function. Set for both UNI and NNI ports.</p>
<i>link integrity timer (T391)</i>	<p>Specifies the interval to send Status Inquiry messages across the NNI port. This will result in a report of all failed connections. This can be set for 5–30 seconds and the default is 6 sec. Both networks must have the same value set for T391.</p>

<i>full status polling cycle (N391)</i>	Specifies the interval to send the Full Status Report request for all PVCs across the NNI port. This can be set for 1–255 polling cycles and the default is 10 cycles. The Full Status reports the status of all the connections, failed or not, across the NNI.
<i>card type</i>	Specifies the card type (within a job only). This parameter is entered just after slot.port. The valid entries include V.35, X.21, port, and LINE with LINE indicating a T1 or E1 line. This parameter is not required in normal use of the command.
<i>CLLM status Tx Timer</i>	Specifies the interval to send ForeSight congestion messages across the NNI port. Can be set for 40 to 350 ms. and the default is 100 sec. Both networks must be Cisco WAN Switching networks.
<i>IDE to DE mapping</i>	Specifies whether the internal DE bit (IDE) status in the FastPacket or ATM cell should be mapped to the frame relay DE bit at the destination. Selection is YES or NO.
<i>interface control template</i>	Specifies the control leads available on the V.35 and X.21 physical frame relay ports and their status.
<i>channel range</i>	Specifies the DS0s used for the T1 or E1 logical port. Can range from 1 to 1–31 e.g. 7–12 indicates six DS0s used for the port starting with DS0 #7. Channel range is specified in the addfrport command.
<i>channel speed</i>	Specifies the bandwidth provided for the logical port. Speed is 64 Kbps times the number of DS0s indicated by the Channel Range

cnfftport

Configures the parameters of an FTC port. When configuring an FTC port, the user is prompted for each parameter. Pressing the Return key keeps the current value for the parameter. The screen display is shaded for parameters not configurable for some applications. The data rates for each of the four ports may be mixed and matched freely provided the total for all four ports does not exceed the maximum composite data rate allowed by the FTC card (2.048 Mbps). Supported data rates are listed below.

Table 16-13 **FTC Port Supported Data Rates**

Data Rates at 56 Kbps Intervals				Data Rates at 64 Kbps Intervals			
56	112	168	224	64	128	192	256
280	336	392	448	320	384	448	512
504	560	616	672	576	640	704	768
728	784	840	896	832	896	960	1024
952	1008	1064	1120	1088	1152	1216	1280
1176	1232	1288	1344	1344	1408	1472	1536
1400	1456	1512	1568	1600	1664	1728	1792
1624	1680	1736	1792	1856	1920	1984	2048

When using **cnfftport** in a job, an additional parameter, port type, is entered just after slot.port. Valid entries include V.35, X.21, port, and line, with line indicating a T1 or E1 line. This parameter is not required in normal use of the command.

Note For a change of port type on an expansion card from data (DLC) to frame relay, a prompt appears stating that the FastPAD must be reset. Use the resetfp command to do this.

The data rates for each of the four ports may be mixed and matched freely from the above data rates provided the total for all four ports does not exceed 2048 Kbps. Data rates (Kbps) available when using the 1 Mbps FTI are as follows:

Table 16-14 **FTI Port Supported Data Rates**

Port Data Rates for 1 Mbps FTI			
1024	512	256	128
896	448	224	112
768	384	192	64
672	336	168	56

When using **cnfftport** in a job, an additional parameter, card type, is entered just after slot.port. Valid entries include V.35, X.21, T1, and E1. The data rates for each of the four ports may be mixed and matched freely from the above data rates provided the total for all four ports does not exceed 2048 kbps.

Full Name

Configure FTC port

Syntax (T1/E1 ports)

cnfftcport Required parameters (left-to-right):

slot.logical port number	port queue depth
ecn queue threshold	de threshold
signalling protocol	protocol parameters

Optional parameters:
None

Syntax

cnfftcport Required parameters:

slot.port number

Optional parameters (left to right):

speed	clocking
port ID (between 16–991)	port queue depth
de_threshold	ECN q_threshold
signalling protocol	asynchronous status
polling verify timer	error threshold
monitored events count	communication priority
upper/lower RNR threshold	min flags/frames

Related Commands**upftcport, dnftcport, dspftcport****Attributes**

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

Example 1

```
cnfftcport 3.1.1 256 NORMAL 0 65535 65535 100 2 N
```

Description

Reconfigure the FTC port to change Q depths

System Response

```

IPX          TRM  SuperUser      IPX 32    9.1    Date/Time Not Set

Port:        31.1          [ACTIVE ]
Interface:   FTI-V35 DCE          Configured Clock: 256 Kbps
Clocking:    Normal          Measured Rx Clock: 256 Kbps
Port Type    FR          Min Flags / Frames 1
Port ID      4
Port Queue Depth 65535    OAM Pkt Threshold 3 pkts
ECN Queue Threshold 65535    T391 Link Intg Timer 6 sec
DE Threshold 100 %      N391 Full Status Poll 10 cyl
Signalling Protocol STRATA LMI    ForeSight (CLLM) No
Asynchronous Status No          CLLM Status Tx Timer 0 msec
T392 Polling Verif Timer 15    IDE to DE Mapping Yes
N392 Error Threshold 3          Interface Control Template
N393 Monitored Events Count 4          Lead CTS DSR DCD
Communicate Priority No          State ON ON ON
Upper/Lower RNR Thresh 75%/ 25%

Last Command: cnfftport 31.1 256 NORMAL 0 65535 65535 100 2 N

Next Command:

```

The results for the update FR parameters as shown are as follows:

Port Queue Depth	65535	Depth of port queue is set at 65,535 bytes.
ECN Queue Depth	65535	Port queue must reach 65,535 bytes before FECN and BECN bits are set.
DE Threshold	100	Port buffer fill must be 100% before dropping DE frames.
Signalling Protocol	2	LMI disabled
Asynchronous Status	N	No asynchronous messages to user device; wait for polling from user device.
Polling Verify Timer	15	15 seconds heartbeat period
Error Threshold	3	3 failures trigger port comm failure
Monitored Events Count	4	4 events are monitored
Communicate Priority	N	Do not communicate port priority to the user device.
Upper RNR Threshold	75	75% of buffer triggers receiver not ready condition
Lower RNR Threshold	25	25% of buffer clears a receiver not ready condition
Minimum Flags/Frame	1	There is only one flag for each FR data frame.

Table 16-15 cnfftcport – Parameters

<i>slot.port</i>	Specifies the FRP card slot and port number. (Slot and logical port number for T1/E1)
------------------	---

Table 16-16 cnfftcport – Optional Parameters

<i>speed</i>	<p>Specifies the port clock speed in kbps; for a 2.0 Mbps FRP. Speed configured is displayed as Configured Clock. Actual clock rate is displayed as Measured Rx Clock. The available speeds are:</p> <ul style="list-style-type: none"> 1 port (selected speeds, 56 to 512 Kbps) 2 ports (selected speeds, 56 to 512 Kbps) 3 ports (selected speeds, 56 to 512 Kbps) 4 ports (selected speeds, 56 to 512 Kbps) <p>The available clock rates for the 1, 2, 3, and 4 port combinations are as follows: 56 64 72 96 112 384 512</p>
<i>clocking</i>	<p>Specifies the port clock type (normal/looped) [normal]. There are four combinations of clocking that may be used for the FRI-V.35 and two with the FRI-X.21. Refer to Chapter 2, Frame Relay Interface Card for a description of looped and normal clock modes. Not specified for T1/E1 ports.</p> <ul style="list-style-type: none"> FRP is DCE with normal clocking (V.35 and X.21) FRP is DCE with looped clocking (V.35 only) FRP is DTE with normal clocking (V.35 and X.21) FRP is DTE with looped clocking (V.35 only)
<i>port ID</i>	Specifies the DLCI associated with the port (16-991).
<i>port queue depth</i>	specifies the maximum bytes queued for transmission from the FRP port. The range is from 0–65535. The default is 65535.
<i>ecn queue threshold</i>	specifies the port explicit congestion notification. The range is from 0-65535. The default is 65535. This is the point at which the BECN and FECN bits will be set in the communications to the user device.
<i>de threshold</i>	Specifies the port queue depth above which frames with the Discard Eligibility bit set will be discarded. Valid entries are 0–100%, with a default of 100%. An entry of 100% effectively disables DE for the port.
<i>signalling protocol</i>	<p>Specifies the LMI operation mode. The range is from 0-255. The following values are defined (the default is LMI=2):</p> <ul style="list-style-type: none"> LMI = 0 LMI is disabled at this port. LMI = 1 Port configured as Network-Network Interface using ANSI T1.617 Annex D parameters. LMI = 2 Cisco LMI is enabled at this port.
<i>asynchronous status</i>	Specifies whether the IPX should send unsolicited LMI update messages as they appear or whether to wait for the polling from the user device. Valid values are y (yes) or n (no)
<i>polling verify timer</i>	Specifies the Link Integrity Verification Timer heartbeat (keep-alive) period with a valid range of 5–30. This should be set to 5 seconds more than the heartbeat time set in the user equipment. Default is 15.
<i>error threshold</i>	Specifies the number of failures in the monitored events that causes the “keep alive” process to report an alarm. It has an accepted range of 0–255 and a valid range of 1–10. A value of zero defaults to 1, and a value more than 10 defaults to 10.

<i>monitored events count</i>	Specifies the number of monitored events for the “keep alive” process. It has an accepted range of 0–255 and a valid range of 1–10. A port communication fail condition is cleared after this number of successful polling cycles. A value of 0 defaults to 1, and a value more than 10 defaults to 10.
<i>communicate priority</i>	Specifies whether the connections SNA priority (H or L) should be communicated to the user device attached to the port. Valid entries are y (yes) or n (no); default is no.
<i>upper/lower RNR threshold</i>	Specifies the receiver not ready thresholds. Upper threshold is the number of receiver not ready indications from the user equipment before alarm is generated for this port. The lower receiver not ready threshold is the number of indications from the user equipment before an alarm is cleared. Valid values are 1–255; defaults to 75 for upper, 25 for lower threshold.
<i>min. flags/frame</i>	Specifies the minimum number of flags between frames. All values greater than 0 are valid and the default is 1.

cnfict

Sets the interface control template signals for a FastPAD data channel. The signals that can be set using **cnfict** are RTS, CTS, DSR and DCD.

Full Name

Configure interface control template

Syntax

cnfict parameters optional parameters

Related Commands

cpyict, dspict, prtict

Attributes

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

Example 1

```
cnfict 31.1.B.7 act dcd r
```

Description

Configure port 31.1.B.7 with the active interface control template as remote for DCD following RTS

System Response

```

IPX          TRM   SuperUser          IPX 32   9.1   Date/Time Not Set

Data Channel: 31.1.B.7
Interface:    RS232      DTE
Clocking:    Internal
Framing:     DLC
    
```

Interface Control Template for Connection while Active

Lead	Output Value	Lead	Output Value
DSR	ON	RTS	N/A
DCD	Remote RTS	CTS	ON

Last Command: cnfict 31.3.B.7 act dcd r

Next Command:

Table 16-17 cnfict – Parameters

Parameter	Description
<i>channel</i>	Specifies the FastPAD data channel whose interface control template to configure in the format: slot.port.subport.subslot
<i>template</i>	Specifies the interface control template to configure for the channel. The only valid template for a FastPAD data channel is the ACTIVE template. It is specified as "a".
<i>output</i>	Specifies the output lead to configure. Valid output leads are RTS, CTS, and DCD. on The output lead is asserted. off The output lead is inhibited.

Table 16-18 cnfict – Optional Parameters

Parameter	Description
<i>delay</i>	Specifies the time in milliseconds that separates the "off" to "on" lead transitions. Delay is valid only when the output lead is CTS and the input lead is local RTS. "On" to "Off" lead transitions are not subject to this delay.
<i>source</i>	Specifies how the lead is to be configured and has the format: on off local remote input delay Delay is an optional parameter. The following lists the valid source choices: on The output lead is asserted. off The output lead is inhibited. l (for local) indicates that the output follows a local lead. r (for remote) indicates that the output follows a remote lead.

Parameter	Description
input	Specifies the time in milliseconds that separates the "off" to "on" lead transitions. Delay is valid only when the output lead is CTS and the input lead is local RTS. "On" to "Off" lead transitions are not subject to this delay.

cnfvchtp

This command configures an interface signalling type for a FastPAD voice channel. The following interface types are supported:

- E & M
- FXS
- FXO
- AC-15

Any of the five E & M signalling types are supported, as well as four-wire and two-wire facilities. FXS indicates the FastPAD emulates a single line telephone. It operates in loop start mode and provides loop to the connected device. FXO indicates the FastPAD emulates a central office. It operates in loop start or ground start mode and provides loop current and ring voltage to the attached device. AC-15 indicates the European signalling mode. This mode is similar to E & M. Both the A and B types are supported. This command also sets Dual Tone Multi Frequency detect period.

Full Name

Configure voice FastPAD channel type

Syntax

cnfvchtp parameters optional parameters

Related Commands

None.

Attributes

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

Example 1

```
cnfvchtp 31.1.4 FXS * * 1
```

Description

Configure FastPAD voice channel for interface type FXS and a DTMF value of 1

System Response

```
alpha          TRM  YourID:1          IPX 16    9.1    Mar. 16 1997 1:06 PST
```

```

          %      Gain (dB)
Channels Util  In  Out  Interface Type      DTMF    SLT Timeout
14.1     N/A   7   5   FXS L/S              1

```

```
Last Command: cnfvchtp 31.1.4 FXS * * 1
```

```
Next Command:
```

Table 16-19 cnfvchtp – Parameters

Parameter	Description
<i>channel</i>	Specifies the FastPAD channel for which to configure the interface type where channel is specified in the format: slot.port.subslot
<i>interface type</i>	Specifies the interface type to assign to the channel. This specifies the operational mode of the channel. The possible values are: <ul style="list-style-type: none"> • E & M indicates E & M signalling mode. This choice is followed by two parameters: the type of E & M signalling [1-5] and the type of wiring [2w/4w]. • FXS indicates single line telephone mode. This choice is followed by the type of start signalling [LOOP/GND]. • FXO indicates off premise extension mode. • AC-15 indicates the AC-15 European signalling mode. This choice is followed by signalling type [A/B].

Table 16-20 cnfvchtp – Optional Parameters

Parameter	Description
<i>dtmf detect</i>	Specifies whether the FastPAD sends DTMF in-band as a voice-wave signal or detects DTMF codes control frame for transmission and regenerates is detected.
<i>slt timeout</i>	Specifies the timeout period for single line telephone mode. Valid only with FXS ground start.

cpyict

Copies all control template information associated with a specified FastPAD data channel to another. Once copied, the control template information may be edited with the **cnfict** command. See the **cnfict** command for more information on interface control templates.

Full Name

Copy interface control template

Syntax

cpyict parameters

Related Commands

cnfict, **dspict**

Attributes

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

Example 1

```
cpyict 31.1.B.1 31.1.B.2
```

Description

Copy the interface control template from channel 31.1.B.1 to channel 31.1.B.2

System Response

```

IPX          TRM  SuperUser      IPX 32    9.1    Date/Time Not Set

Data Channel: 31.1.B.2
Interface:    RS232      DTE
Clocking:     Internal

```

Interface Control Template for Connection while Active

Lead	Output Value	Lead	Output Value
DSR	ON	RTS	N/A
DCD	OFF	CTS	ON

Last Command: cpyict 31.1.B.1 31.1.B.2

Next Command:

Table 16-21 cpyict – Parameters

Parameter	Description
<i>source channel</i>	Specifies the channel whose interface control template information to copy in the format slot.port.subport.subslot
<i>destination channel</i>	Specifies the channel that will receive the copied interface control template information in the format: slot.port.subport.subslot.

delcon

Deletes a FastPAD connection. All FastPAD connection types can be deleted with this command, including switched voice, voice and data connections. When you enter the **delcon** command, a prompt appears asking you to confirm the deletion. Connections can be deleted from the IPX node at either end of the connection. Do not delete a connection when the node at the other end of the connection is unreachable. The unreachable node will not recognize the deletion. It is especially important not to delete a connection to an unreachable node and then connect that channel to another node. Channel connections are added to the network with the **addcon** command.

Full Name

Delete connections

Syntax

delcon parameters

Related Commands

addcon, dspcon, dspcons

Attributes

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

Example 1

```
delcon 31.1.B.1
```

Description

Delete connection 31.1.B.1. The connections to delete are highlighted, and a prompt appears asking you to confirm the deletion. Respond with “y” for yes. Connection 25.1 is deleted.

System Response

Local Channel	Remote NodeName	Remote Channel	State	Type	Compression	Code	Route Avoid	COS	O
31.1	IPX	31.3	Ok	session					
31.1	IPX	31.2	Ok	session					
31.1.B.1	IPX	31.2.B.2	Ok	16					
31.1.8	IPX	31.2.8	Ok	atcl2					
31.2	IPX	31.1	Ok	session					
31.2.B.2	IPX	31.1.B.1	Ok	16					
31.2.8	IPX	31.1.8	Ok	atcl2					
31.3	IPX	31.1	Ok	session					

This Command: delcon 31.1.B.1

Delete these connections (y/n)?

Table 16-22 delcon – Parameters

Parameter	Description
<i>channel(s)</i>	Specifies the FastPAD channel to delete. Channel is specified in the following format: <ul style="list-style-type: none"> slot.port For switched voice connections slot.port.subslot For permanent voice connections slot.port.subslot.subport For data connections FTC_slot.port.FPslot.subport.DLCI For frame relay connections, where subslot and subport refer to FastPAD.

delfp

Deletes a FastPAD from the IPX network. The FastPAD to delete is specified by its unique name (assigned using the **addfp** command).

Full Name

Delete connection group

Syntax

delfp parameters

Related Commands

addfp, **dspfp**

Attributes

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

Example 1

```
delfp 31.1
```

Description

Delete FastPAD 31.1.

System Response

```
IPX          TRM   SuperUser      IPX 32    9.1    Date/Time Not Set
```

FastPADs Information

Slot.Port	Name	ID	FP_DLCI	Port_ID	Alarm
31.1	FP1	1	17	0	OK
31.2	FP2	2	18	0	OK
31.3	FP3	3	19	0	OK
31.4	FP4	4	20	0	OK

```
This Command: delfp 31.1
```

```
Delete FastPAD (y/n)?
```

Table 16-23 delfp – Parameters

Parameter	Description
<i>slot.port</i>	Specifies the location of the FastPAD to be removed.

Table 16-24 delfp – Optional Parameters

Parameter	Description
<i>name</i>	Specifies the name of the FastPAD to be removed.

delftport

The following information applies only to FTC T1/E1 applications. Deletes logical FTC ports and unassigns associated DSØ/timeslots. The unassigned DSØ/timeslots may be recombined with the **addftcport** command to create new logical ports. Logical port numbers range from 1 to 24 for T1 lines and 1 to 31 (16 reserved) for E1 lines. The port screen (normally seen with the **dspftcport** command) will be displayed regardless of successful port deletion. The screen will display defined port numbers for the specified line. Error messages are displayed when the procedure is incorrect. The following lists the error/warning messages of this command.

Table 16-25 delftport Command Error Messages

Messages	Reason for Message
"Slot is out of range"	Line number not correct for FRP T1/E1
"Port does not exist"	Logical port number does not exist
"You must first down the port"	Logical port is up
"You must first down the port"	Specified port is not first DSØ/timeslot of logical port

Full Name

Delete FTC (T1/E1)

Syntax

delftport parameters

Related Commands

addrport, dspfrport, dnfrport

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX
Lock	Yes

Example 1

```
delfrport 8 .1
```

Description

Delete FTC port 8.1

System Response

```
alpha TRM   YourID:1           IPX 16     9.1.Z     Mar. 15 1997 17:28 CST
```

```
Port configuration for FRP 8
```

<u>From</u>	<u>Chan</u>	<u>Speed</u>	<u>Interface</u>	<u>State</u>
1	9-15	448	FTI T1	ACTIVE
20	20-24	320	FTI T1	ACTIVE

```
Last Command: delftcpport 8.1
```

```
Next Command:
```

Table 16-26 delftcpport – Parameters

Parameter	Description
<i>slot</i>	Specifies the FTC T1 or E1 line (cabinet slot) number of the port to delete
<i>port</i>	Specifies the logical port number of the port to delete.

dnfrport

Downs the specified FastPAD FRAM-01 frame relay port. All connections must be removed from the port before the port can be deactivated.

Full Name

Down Frame Relay port

Syntax

dnfrport parameters

Related Commands

cnfrport, dspfrport, upfrport

Attributes

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

Example 1

```
dnfrport 6.3
```

Description

Down frame relay port 6.3

Table 16-27 dnfrport - Parameters

Parameter	Description
<i>slot</i>	Specifies the slot number of the frame relay card with the port to down.
<i>port</i>	Specifies the port number to down on the specified frame relay card.

dnftcport

Downs (deactivates) the specified FTC port. All connections must be removed from the port before the port can be deactivated.

Full Name

Down FTC port

Syntax

dnftcport parameters

Related Commands

cnftcport, dspftcport, upftcport

Attributes

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

Example 1

```
dnftcport 31.1
```

Description

Down (deactivate) FTC port 3.1

```

IPX          TRM   SuperUser      IPX 32   9.1   Date/Time Not Set

Port:        31.1           [INACTIVE]
Interface:   FTI-V35 DCE           Configured Clock:    64 Kbps
Clocking:    Normal                               Measured Rx Clock:  0 Kbps
Port Type    FR              Min Flags / Frames  1
Port ID      4
Port Queue Depth      65535      OAM Pkt Threshold   3 pkts
ECN Queue Threshold   65535      T391 Link Intg Timer 6 sec
DE Threshold          100 %      N391 Full Status Poll 10 cyl
Signalling Protocol   STRATA LMI      ForeSight (CLLM)     No
Asynchronous Status   No              CLLM Status Tx Timer 0 msec
T392 Polling Verif Timer 15            IDE to DE Mapping    Yes
N392 Error Threshold  3              Interface Control Template
N393 Monitored Events Count 4              Lead   CTS   DSR   DCD
Communicate Priority   No              State  ON   ON   ON
Upper/Lower RNR Thresh 75%/ 25%

Last Command: dnftcport 31.1

Next Command:

```

Table 16-28 dnftcport – Parameters

Parameter	Description
<i>slot</i>	Specifies the slot number of the FTC to down.
<i>port</i>	Specifies the port number to down on the specified FTC card.

dspchcnf

Displays configuration details for FastPAD voice and data channels:

- FastPAD Voice channels display:
Channel, Percentage Utilization, Gain In and Out, and the Interface Type.
- FastPAD Data channels display:
Channel, Percentage Utilization, and the Type, i.e., data rate.

If the channel specified is a FastPAD voice channel, the display includes configuration details for all voice channels on the FTC port starting with the specified channel. If the channel specified is a data channel, the display includes configuration details for all channels on the specified FTC port starting with the specified channel.

Full Name

Display channel configuration

Syntax

dspchcnf parameters

Related Commands

prtchcnf

Attributes

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

Example 1

```
dspchcnf 31.1.8
```

Description

Display configuration values for channel 31.1.8

```

IPX          TRM SuperUser      IPX 32    9.1    Date/Time Not Set
              %      Gain  (db)
Channels Util   In   Out   Interface Type   DTMF  SLT Timeout
31.1.8   100   -4   2     FXS L/S          30
    
```

Last Command: dspchcnf 31.1.8

Next Command:

Table 16-29 dspchcnf – Parameters

Parameter	Description
<i>start channel</i>	Specifies the channel with which to start the display in the format: slot.port.subport For FastPAD voice connections slot.port.subport.subslot For FastPAD data connections

dspcon

Displays connection information for a specified channel. The information displayed includes:

- Channel numbers for both the local and remote ends of the connection.
- Node names at both ends of the connection.
- Type (“s” for switched and “v” for voice) or data rate of the connection.
- Compression type (ATC, CELP, Negotiated).
- Routing restriction.
- Class of service (COS) of the connection.
- Connection route listing the end nodes and any intermediate nodes.
- Preferred route for the connection (if configured).
- Status of the cards associated with the connection. The status that may be displayed includes:

OK	Connection OK
FAILED	Connection failed
- Connection descriptor (if configured).
- Status of the “Feeder” connection. This is the connection between the FastPAD and the FTC. A failure is indicated as “End Point: Feeder Fail”.

Full Name

Display connections

Syntax

dspcon parameters

Related Commands

addcon, delcon, dspcons

Attributes

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

Example 1

`dspcon 31.1.8`

Description

Display voice connection information for FTC channel 31.1.8

System Response

```
IPX          TRM  SuperUser      IPX 32    9.1    Date/Time Not Set
Conn: 31.1.8  IPX          31.2.8    atcl2
```

Status: OK

Path: Route information not applicable for local connections

```
IPX          FTC:   OK          IPX          FTC:   OK
              FTI:   OK          FTI:   OK
              FastPAD: OK      FastPAD: OK
```

Last Command: dspcon 31.1.8

Next Command:

Table 16-30 dspcon – Parameters

Parameter	Description
<i>channel</i>	Specifies the FastPAD channel for which to display connection details. The command displays connection information for one channel at a time. You cannot specify a set of channels. <channel> is specified in the following formats:
slot.port	For switched voice connections
slot.port.subslot	For permanent voice connections
slot.port.subslot.subport	For data connections
FTCslot.FTCport.subslot.subport.DLCI	For frame relay connections, where subslot and subport refer to FastPAD.

dspcons

Displays a summary of the connections on an IPX node. The fields displayed in the **dspcons** screens are as follows:

Table 16-31 dspcons Display Fields

Fields	Description										
<i>Local Channel</i>	The connection's channel at this node.										
<i>Remote Node Name</i>	The name of the node at the other end of the connection.										
<i>Remote Channel</i>	The connection's channel at the remote node.										
<i>State</i>	The state of the connection(s) are as follows <table border="1"> <thead> <tr> <th>State</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>OK</td> <td>routed</td> </tr> <tr> <td>Down</td> <td>downed</td> </tr> <tr> <td>OK(Dn)</td> <td>waiting for onhook to occur to allow courtesy down to take place for connection(s) that have been courtesy downed using the dncon command.</td> </tr> <tr> <td>Failed</td> <td>unrouted, but trying</td> </tr> </tbody> </table>	State	Description	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	unrouted, but trying
State	Description										
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	unrouted, but trying										
<i>Type</i>	The type of connection (v = voice, fr = frame relay, data rate in kbps for data).										
<i>Route Avoid</i>	The type of lines to avoid when routing (satellite lines, terrestrial lines, lines with zero code suppression).										
<i>Compression</i>	The type of compression applied to the connection (ATC8, ATC12, ATC16, CELP8).										
<i>COS</i>	The Class Of Service.										
<i>Owner</i>	The end of the connection in control of re-routing.										
<i>Descriptor</i>	The connection descriptor string (if +d option specified).										
<i>Loopback</i>	A connection with a local loopback is indicated by a right parenthesis symbol between the "Local Channel" and "Remote NodeName" columns. A connection with a remote loopback is indicated by a right parenthesis symbol before the channel number in the "Remote Channel" column.										

Full Name

Display connections

Syntax

dspcons optional parameters

Related Commands

addcon, delcon, dspcon

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	IPX
Lock	No

Example 1

`dspcons 31.1.8`

Description

Displays all connections starting with 31.1.8, in this case voice connections.

System Response

```
IPX          TRM  SuperUser      IPX 32    9.1    Date/Time Not Set
Conn: 31.1.8  IPX          31.2.8    atcl2
```

Status: OK

Path: Route information not applicable for local connections

```
IPX          FTC:  OK          IPX          FTC:  OK
             FTI:  OK          IPX          FTI:  OK
             FastPAD: OK        IPX          FastPAD: OK
```

Last Command: `dspcon 31.1.8`

Next Command:

Table 16-32 dspcons – Optional Parameters

Parameter	Description
<i>start channel</i>	<p>Specifies the channel to begin the display. <start channel> is specified in one of the following formats:</p> <p>slot.port.DLCI frame relay channel remote node.groupname frame relay group connection</p> <p>If no starting channel is specified, the display begins with the first connected channel.</p> <p>All FastPAD connections are shown as part of frame relay connections on the IPX.</p>
<i>node name</i>	<p>Specifies that only connections to this remote node from the local node be displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed</p>
<i>connection type</i>	<p>Specifies that only connections of this type be displayed. If no "connection type" is designated, all connections appear. Valid connection types are:</p> <p>-f Displays all FastPAD and frame relay connections. +d +g</p> <p>When you enter the connection type on the command line, it must be preceded with a hyphen, "-".</p>
<i>+d</i>	<p>Specifies that the display show the connection string in place of the usual compression and ownership fields.</p>

dspfp

Displays the header identifying the shelf slot and port of the specified FastPAD and a listing of the cards within that FastPAD. The header contains a blinking “off line” indicator when the FastPAD is unreachable. The card listing includes the base card and all expansion slot cards within FastPAD. A revision level and status field are included for each card. The status field values are as follows:

- Active Card in use.
- Empty No card installed in slot.
- Failed Card failed.
- Standby Card in standby mode

Full Name

Display FastPAD card information

Syntax

dspfp parameter

Related Commands

addfp, delfp, dspfps

Attributes

Privilege	1–2
Jobs	No
Log	No
Node	IPX
Lock	No

Example 1

```
dspfp 31.1
```

Description

Display 31.1 card information

System Response

```
IPX          TRM  SuperUser      IPX 32   9.1   Date/Time Not Set
```

```
          FastPAD FP1      at shelf 31.1
```

```
Card
Type
```

```
Status
```

```
B  BASE      Active          | Lock Status:   Locked
1  Empty
2  Empty
3  Empty
4  VFC-01    Active(SWITCHED)
5  Empty
6  Empty
7  Empty
8  VFC-01    Standby          | Composite Link: BASE.8
```

```
Last Command: dspfp 31.1
```

```
Next Command: dspftcport
```

Table 16-33 dspfp – Parameters

Parameter	Description
<i>slot.port</i>	Specifies the slot and port for which information will be displayed.

dspfps

Displays a list of all FastPADs connected to an IPX node. The list includes the FastPAD name, ID, source DLCI, destination DLCI and alarm status (OK, Minor or Major). A FastPAD/IPX connectivity is added or deleted with the **addfp** and **delfp** commands respectively.

Full Name

Display information for all FastPADs

Syntax

dspfps

Related Commands

addfp, **delfp**, **dspfp**

Attributes

Privilege	1–2
Jobs	No
Log	No
Node	IPX
Lock	No

Example 1

```
dspfps
```

Description

Display card information for all FastPADs

System Response

cc7 VT SuperUser IPX 32 9.1 Mar. 21 1997 15:39 PST

FastPADs Information

Slot.Port	Name	ID	FP_DLCI	Port_ID	Alarm
31.2	cc7FP	5	53	0	OK

Last Command: dspfps

Next Command:

dspfrport

Displays one of three choices; the state of all frame relay ports in a FastPAD, general information on all ports on the FRAM-01 card used for frame relay connections, or detailed status on a single specified frame relay port. The more specific the port address in the command, the more detail is provided. The following are examples of the **dspfrport** command:

dspfrport FTC_slot.port	displays all frame relay ports in a FastPAD
dspfrport FTC_slot.port.FPslot	displays the port states at the FastPAD card level
dspfrport FTC_slot.port.FPslot.port	detailed display of the designated FastPAD FRAM-01 port

The following provides a list of displayed port parameters for a single port. A full description of these parameters is provided in the **cnffrport** command.

Table 16-34 Frame Relay Port Parameters

Parameters	Description
Port number	Polling Verification Timer
DLCI number	Error Threshold
State: Active or inactive	Monitored Events Count
Interface Type: V.35 or X.21, DCE or DTE	Priority Communicated
Configured clock speed in kbps	The lead states in the Interface Control Template
Measured clock speed in kbps	Receiver Not Ready Thresholds
The port VC queue depth in bytes	Flags per frame
The VC queue ECN threshold in bytes	OAM FastPacket Threshold (for NNI ports)
The DE threshold	Link Integrity Timer (for NNI ports FRP rev. F/H or above)
The Signalling Protocol	Full Status Polling cycle (for NNI ports)
Asynchronous Status	The lead states in the Interface Control Template

Full Name

Display Frame Relay port

Syntax

dspfrport

Related Commands

cnffrport, **upfrport**, **dnfrport**

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	IPX
Lock	?

Example 1

```
dspfrport
```

Description

Display the port status of the FRPs in the node

System Response

```
alpha          TRM   YourID:1      IPX 16      9.1      Mar. 15 1997 15:48 PST
```

```
FRP Port States
Port  ID   State
9.1   0    ACTIVE
9.2   0    ACTIVE
9.3   0    INACTIVE
9.4   0    INACTIVE
```

```
Last Command: dspfrport
```

```
Next Command:
```

Example 2

```
dspfrport 8
```

Description

Display the port statuses for the FRP in slot 8

System Response

D2.ipx6 TRM YourID:1 IPX 16 9.1.B1 Aug. 12 1997 13:47 PST

Port configuration for FRP 8

Port	ID	Speed	Interface	State	Protocol	Port Type
1	0	256	FRI-V35 (DCE)	ACTIVE	None	FR
2	0	256	FRI-V35 (DCE)	ACTIVE	None	FR
3	0	256	FRI-V35 (DCE)	FAILED	Annex A UNI	FR
4	0	256	FRI-V35 (DCE)	ACTIVE	Annex D UNI	FR

Last Command: dspfrport 8

Next Command:

Example 3

dspfrport 5.1

Description

Display the port statuses for the frame relay port 5.1

System Response

D2.ipx5 TRM YourID:1 IPX 16 9.1 Aug. 4 1997 16:39 PST

```

Port:          5.1          [ACTIVE ]
Interface:     FRI-X21 DCE   Configured Clock:    256      Kbps
Clocking:      Normal      Measured Rx Clock:    256      Kbps
Port Type     FR           Min Flags / Frames    1
Port ID       0
Port Queue Depth 65535      OAM Pkt Threshold3pkts
ECN Queue Threshold 65535      T391 Link Intg Timer    6          sec
DE Threshold    100        %      N391 Full Status Poll    10        cyl
Signalling Protocol None      ForeSight (CLLM)      No
Asynchronous Status No      CLLM Status Tx Timer    0          msec
T392 Polling Verif Timer 15      IDE to DE Mapping      Yes
N392 Error Threshold 3      Interface Control Template
N393 Monitored Events Count 4      Lead I
Communicate Priority No      State ON
Upper/Lower RNR Thresh 75%/ 25%
    
```

Last Command: dspfrport 5.1

Next Command:

dspftcport

Displays one of three choices; the state of all FTC ports in a node, general information on all four ports on a specified FTC card, or detailed status on a single specified FTC port. The more specific the port address in the command, the more detail is provided. The following are examples of the **dspftcport** command:

- dspftcport** displays states of all FTC ports in the node
- dspftcport 8** displays the port states for FTC in slot 8
- dspftcport 8.1** displays the configuration for port 1 of the FTC in slot 8

Parameters displayed by the **dspftcport** command are listed below:

Table 16-35 dspftcport - Parameters

Parameters	Description
Speed	The port clock speed in Kbps. Speed configured is displayed as Configured Clock. Actual clock rate is displayed as Measured Clock. The available speeds are 19.2 Kbps, 38.4 Kbps, 56 Kbps, 64 Kbps, 128 Kbps.
Clocking	The port clock type (normal/looped) [normal].
Port queue depth	The maximum bytes queued for transmission from the FTC. Range is 0 to 65535. Default is 65535.
ECN queue threshold	The maximum bytes queued for transmission from the FTC. Range is 0 to 65535. Default is 65535.
Update protocol ID	The lead states in the Interface Control Template
Measured clock speed in kbps	The update protocol supported. The default is 2. The following values are defined as follows: <ul style="list-style-type: none"> 0 None. 1 ANSI T1.617 Annex D 2 LMI Revision 1

Full Name

Display FTC port configuration

Syntax

dspftcport

Related Commands

cnfftport, upftcport, dnfftport

Attributes

Privilege	1-2
Jobs	No
Log	No
Node	IPX
Lock	No

Example 1

`dspftcport`

Description

Display the port status of the FTCs on the node

System Response

```
IPX          TRM   SuperUser      IPX 32   9.1   Date/Time Not Set

FTC Port States
Port  ID   State   Type
31.1  0     ACTIVE  FR
31.2  0     ACTIVE  FR
31.3  0     ACTIVE  FR
31.4  0     ACTIVE  FR
```

Last Command: `dspftcport`

Next Command:

Example 2

`dspftcport 31.1`

Description

Display the status of FTC port 31.1, slot 31, port 1.

System Response

```

IPX          TRM  SuperUser      IPX 32   9.1   Date/Time Not Set

Port:        31.1                [ACTIVE ]
Interface:   FTI-V35 DCE          Configured Clock: 64 Kbps
Clocking:    Normal              Measured Rx Clock: 64 Kbps
Port Type    FR                  Min Flags / Frames 1
Port ID      0
Port Queue Depth 65535          OAM Pkt Threshold 3 pkts
ECN Queue Threshold 65535        T391 Link Intg Timer 6 sec
DE Threshold 100 %              N391 Full Status Poll 10 cyl
Signalling Protocol STRATA LMI   ForeSight (CLLM) No
Asynchronous Status No         CLLM Status Tx Timer 0 msec
T392 Polling Verif Timer 15    IDE to DE Mapping Yes
N392 Error Threshold 3          Interface Control Template
N393 Monitored Events Count 4      Lead CTS DSR DCD
Communicate Priority No         State ON ON ON
Upper/Lower RNR Thresh 75%/ 25%

```

Last Command: dspftcport 31.1

Next Command:

dspict

Displays interface control template information for FastPAD data channels. The displayed information includes:

- The specified channel.
- The type of template: a or ACTIVE is the only valid for FASTPADs.
- The associated output leads and their status:

ON

OFF

Following a local input

Following a remote input

The input being followed, where applicable, is specified. Any RTS to CTS delay is also shown.

Full Name

Display interface control template

Syntax

dspict parameters

Related Commands

cnfict, **cpyict**

Attributes

Privilege 1–2

Jobs No

Log No

Node IPX

Lock No

Example 1

```
dspict 31.1.8.1 a
```

Description

Display the active interface control template for channel 31.1.8.1

System Response

```

IPX          TRM   SuperUser      IPX 32    9.1    Date/Time Not Set

Data Channel: 31.1.8.1
Interface:    RS232      DCE
Clocking:     External

```

Interface Control Template for Connection while Active

Lead	Output Value	Lead	Output Value
DSR	ON	RTS	N/A
DCD	Remote RTS	CTS	Local RTS
		CTS Delay	12 (x10 msec)

Last Command: dspict 31.1.8.1 a

Next Command:

Table 16-36 dspict – Parameters

Parameter	Description
<i>channel</i>	Specifies the channel in the format slot.port.subslot.subport
<i>template</i>	Specifies the control template to display for the channel. There is only one template available for FastPAD data channels: "a" for the ACTIVE template.

prtchcnf

Prints the configuration details for FTC channels. This command uses the same syntax, and prints the same information as is displayed using the **dspchcnf** command. See the **dspchcnf** command for syntax and output information.

Full Name

Print channel configurations

Syntax

prtchcnf parameters (see the **dspchcnf** command)

Related Commands

dspchcnf

Attributes

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

prtcons

Prints a summary of connections terminated at the IPX node. This command uses the same syntax and prints the same information as is displayed using the **dspcons** command. See the **dspcons** command for syntax and output information.

Full Name

Print connection

Syntax

prtcons parameters optional parameters (see the **dspcons** command)

Related Commands

dspcons

Attributes

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

prtict

Prints a data channel's interface control template. This command uses the same syntax, and prints the same information as is displayed using the **dspict** command. See the **dspict** command for syntax and output information.

Full Name

Print interface control template

Syntax

prtict parameters (see the **dspict** command)

Related Commands

dspict

Attributes

Privilege	1–2
Jobs	Yes
Log	No
Node	IPX
Lock	Yes

resetfp

This command reboots a FastPAD.

Full Name

Reset FastPAD

Syntax

resetfp parameters

Related Commands

addfp, delfp, dspfp, dspfps

Attributes

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

Example 1

```
resetfp 31.1
```

Description

Restart port 31.1 on the FTC card

Table 16-37 resetfp – Parameters

Parameter	Description
<i>slot.port</i>	Specifies the slot and the port of the FTC card connecting the FastPAD.

restartfp

This command restarts a FastPAD to IPX control session. A control session is first established when a FastPAD is added to the node and the port speed and parameters match. Once a control session is established, the FastPAD can be configured and managed by commands issued at an IPX node.

Full Name

Restart FastPAD session establishment

Syntax

restartfp parameters

Related Commands

addfp, delfp, dspfp, dspfps

Attributes

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

Example 1

```
restartfp 31.1
```

Description

Restart port 31.1 on the FTC card

Table 16-38 restartfp – Parameters

Parameter	Description
<i>slot.port</i>	Specifies the slot and the port of the FTC card connecting the FastPAD whose session is to be reestablished.

upfrport

Activates a single port on an FRP. If the port has not been configured, the default configuration values are used to configure the port.

Full Name

Up Frame Relay port

Syntax

upfrport parameter

Related Commands

dnfrport, **cnfrport**

Attributes

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

Example 1

```
upfrport 9.2
```

Description

Activate port 2 on the FRP in slot 9

System Response

```

alpha          TRM  YourID:1          IPX 16    9.1    Mar. 15 1997 15:51 PST

Port:          9.2          [ACTIVE ]
Interface:     FRI-V35 DTE          Configured Clock: 256 Kbps
Clocking:      Normal          Measured Rx Clock: 0 Kbps
Port ID                4
Port Queue Depth      65535      OAM Pkt Threshold      3 pkts
ECN Queue Threshold   65535      T391 Link Intg Timer   6 sec
DE Threshold          100 %      N391 Full Status Poll  10 cyl
Signalling Protocol   None      ForeSight (CLLM)       No
Asynchronous Status   No      CLLM Status Tx Timer   0 msec
T392 Polling Verif Timer 15      Interface Control Template
N392 Error Threshold   3      Lead      State
N393 Monitored Events Count 4      RTS      ON
Communicate Priority    No      DTR      ON
Upper/Lower RNR Thresh 75%/ 25%
Min Flags / Frames    1

Last Command: upfrport 9.2

Next Command:
    
```

Table 16-39 upfrport - Parameters

Parameter	Description
<i>slot</i>	Specifies slot number of the FRP card containing the port to be upped.
<i>port</i>	Specifies the port to be upped. Range is 1-4.

upftcport

Activates a single port on an FTC. If the port has not been configured, the default configuration values are used to configure the port.

Full Name

Up FTC port

Syntax

upftcport parameter

Related Commands

dnftcport, **cnftcport**

Attributes

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

Example 1

```
upftcport 31.1
```

Description

Activate port 1 on the FTC in slot 31

System Response

```

IPX          TRM   SuperUser      IPX 32    9.1    Date/Time Not Set

Port:        31.1          [ACTIVE ]
Interface:   FTI-V35 DCE           Configured Clock:    64 Kbps
Clocking:    Normal           Measured Rx Clock:  0 Kbps
Port Type    FR              Min Flags / Frames   1
Port ID      6
Port Queue Depth      65535      OAM Pkt Threshold    3 pkts
ECN Queue Threshold   65535      T391 Link Intg Timer  6 sec
DE Threshold          100 %      N391 Full Status Poll 10 cyl
Signalling Protocol   STRATA LMI    ForeSight (CLLM)     No
Asynchronous Status   No           CLLM Status Tx Timer  0 msec
T392 Polling Verif Timer  15         IDE to DE Mapping     Yes
N392 Error Threshold   3          Interface Control Template
N393 Monitored Events Count  4          Lead   CTS   DSR   DCD
Communicate Priority    No          State  ON    ON    ON
Upper/Lower RNR Thresh 75%/ 25%

Last Command: upftcport 31.1

Next Command:
    
```

Table 16-40 upftcport - Parameters

Parameter	Description
<i>slot . port</i>	Specifies slot and port number on the FTC card to be upped.

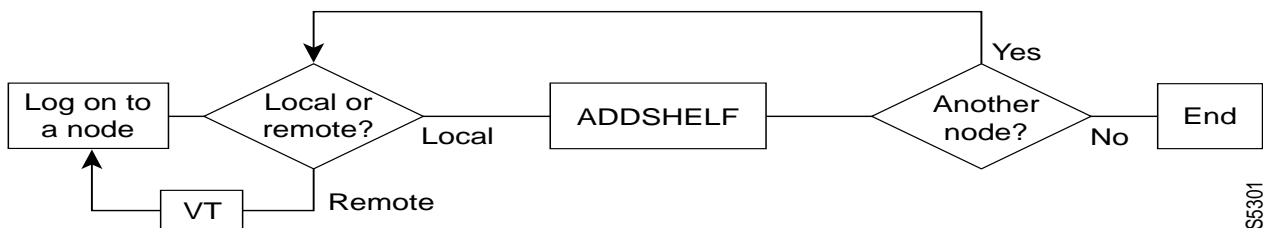
Tag Switching Commands

The addition of a VSI based controller such as the TSC (Tag Switching Controller) to the BPX is similar to the addition of an ESP or an MGX 8220 shelf to the BPX. Use the **addshelf** command to add the TSC to any BXM trunk. Use the **delshef** command to delete the controller from the network after downing the port and trunk with the **dnport** and **dntrk** commands.

Adding the Controller

The first step to complete when adding a VSI based controller is the **addshelf** command. See Figure 17-1 for an illustration of the command sequence for setting up an interface shelf.

Figure 17-1 Add an Interface Shelf to the Network



IPX/AF is the designation of an IPX node serving as an interface shelf. IGX/AF is the designation of an IGX node serving as an interface shelf. Display commands such as **dspnw** and **dspnode** display these designations. The **dspnode** command identifies the hub and feeder nodes and shows the alarm status. The designation for an MGX 8220 shelf serving as an interface shelf is AXIS. The designation for an Tag Switch Controller serving as an interface shelf is TSC.

To delete a feeder shelf, use **delshef**. To view conditions on a feeder trunk, use **dspnode**. Note that **addshelf** and **addtrk** are mutually exclusive commands.

Resource Partitioning

Up until now all the LCNs in a BXM card were managed exclusively by the BCC. With the introduction of VSI, BCC must allocate a range of LCNs for use by the BXM card. The next step to complete when adding a VSI based controller is creating and configuring resource partitions on BXM interfaces to allow the control of BXM interfaces by this controller, the user must create resource partitions on these interfaces. Use the **cnfrsrc** command (a new command added in Release 9.1) to add, delete and modify a partition on a specified interface. Release 9.1 supports only one partition per interface and one controller per partition.

To add a controller or configure a resource partition, use the following BCC configuration commands:

- Port/Trunk commands: **upport/uptrk, dnport/dntrk**
- Shelf Commands: **addshelf, delshelf, dspnode**
- Partition Commands: **cnfrsrc, dsprsrc**
- Qbin Commands: **cnfqbin, dspqbin**

Summary of Commands

Table 17-1 shows the command name and starting page for the description of each Tag Switch Controller related command.

Table 17-1 **Commands for Setting Up a Tag Switch Controller**

Mnemonic	Description	Page
addshelf	Add a trunk between the hub node and access shelf.	17-4
cnfqbin	Configure Qbin card	17-6
cnfrsrc	Configure TSC resources	17-8
delshef	Delete a trunk between a hub node and access shelf	17-12
dnport	Down port	17-14
dntrk	Down trunk	17-16
dspnode	Display summary information about interface shelves	17-18
dspqbin	Display Qbin card	17-20
dsprsrc	Display TSC resources	17-22
upport	Up port	17-24
uptrk	Up trunk	17-26

addshelf

Adds a trunk between a hub node and an interface shelf in a tiered network. The hub can be either a BPX or an IGX.

The interface shelf can be one of the following:

- An MGX 8220 shelf connected to a BPX node
- A Tag Switch Controller connected to a BPX node
- An IPX node connected to a BPX node that serves as a hub for the IPX/AF
- An IGX node connected to an IGX routing node that serves as a hub for the IGX/AF

The signaling protocol that applies to the trunk on an interface shelf is Annex G.

Because tiered network capability is a paid option, personnel in the Cisco Technical Assistance Center (TAC) must telnet to the unit and configure it as an interface shelf before you can execute **addshelf**.

Each IPX/AF, IGX/AF, or MGX 8220 shelf has one trunk that connects to the BPX or IGX node serving as an access hub. A BPX hub can support up to 16 T3 trunks to the interface shelves. An IGX hub can support up to 4 trunks to the interface shelves.

Before it can carry traffic, the trunk on an interface shelf must be “upped” (using **uptrk**) on both the interface shelf and the hub node and “added” to the network (using **addshelf**). Also, a trunk must be free of major alarms before you can add it with the **addshelf** command.

Full Name

Add a feeder shelf.

Syntax

```
addshelf <trunk> <shelf-type>
```

Note If you manage a tiered network through the command line interface, you can manage only Frame Relay interworking connections (ATFR) across the network. Three-segment connections for carrying serial data or voice between IGX/AFs is allowed, but you must manage them through StrataView Plus.

Related Commands

delshelf, **dspnode**, **dsprk**

Attributes

Privilege	1–4
Jobs	Yes
Log	Yes
Node	BPX, IGX
Lock	No

Example 1

```
addshelf 11.1 a
```

Description

Add trunk 11.1 as an MGX 8220 interface shelf. After you add the shelf, the screen displays a confirmation message and the name of the shelf.

System Response

```
nmsbpx23      TN      SuperUser      BPX 15      9.1 Aug. 16 1997 13:28 PST
```

BPX Interface Shelf Information

Trunk	Name	Type	Alarm
1.3	AXIS240	AXIS	OK
11.2	A242	AXIS	OK

```
This Command: addshelf 11.1
```

```
Enter Interface Shelf Type: I (IPX/AF), A (AXIS)
```

Table 17-2 addshelf–Parameters

Parameter	Description
trunk	Specifies the slot and port number of the trunk.
shelf type	On a BPX node, <i>shelf type</i> specifies the type of interface shelf when you execute addshelf . The choices are I for IPX/AF or IGX/AF, T for Tag Switching Controller, or A for MGX 8220. On an IGX hub, only the IGX/AF is possible, so <i>shelf type</i> does not appear.

cnfqbin

Use the **cnfqbin** command to create the Qbin configuration on the selected port or trunk. You can configure Qbins on both BXM trunks and ports.

Full Name

Configure qbin

Syntax

cnfqbin <slot number>.<port number>

Related Commands

dspqbin

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	BPX
Lock	No

Example

```
cnfqbin 13.1
```

Description

Create a Qbin configuration on the OC3 trunk on port 1 of slot 13 on the BPX to support Tag Switching.

System Response

```
sw57          TN      SuperUser      BPX 15      9.1.1      Mar. 10 1997 10:41 GMT
```

```
Port/Trunk:      13.1      [ACTIVE ]
Qbin Id :
Enable Qbin (Y/N) :
Minimum Bandwidth :
Qbin Discard threshold:
Low CLP threshold:      [ 80 ] %
High CLP threshold:      [ 80 ] %
EFCI threshold:      [ 30 ] %
```

```
Last Command: cnfqbin 13.1
```

Table 17-3 cnfqbin-Parameters

Parameter	Description
slot.port	Specifies the BXM card slot and port number.
Qbin ID	Specifies the ID number of the Qbin available for use by the TSC (Tag Switch Controller) for VSI. The range is 0 to 255. 0 is the default. Always use 10 in 9.1.
Enable Qbin	Answer yes or no to enable your Qbin configuration.
Minimum Bandwidth	Specifies the minimum bandwidth in cps (characters per second) available for the Qbin. The range is 0 to 352207. 0 is the default.
Qbin Discard Threshold	Specifies the threshold in percentage for Qbin discard. The range is 0 to 100.
CLP Low Threshold	Specifies the threshold in percentage for CLP low. The range is 0 to 100. 80% is the default.
CLP High Threshold	Specifies the threshold in percentage for CLP high. The range is 0 to 100. 80% is the default.
EFCI threshold	Specifies the threshold in percentage for EFCI. The range is 0 to 100. 30% is the default.

cnfrsrc

Use the **cnfrsrc** command to partition resources for AutoRoute PVCs and VSI-Tag Switching.

Full Name

Configure resource

Syntax

```
cnfrsrc <slot>.<port> <maxpvclens> <maxpvcbw> <partition> <e/d> <minvsilens> <maxvsilens>  
<vsistartvpi> <vsiendvpi><vsiminbw> <vsimaxbw>
```

Related Commands

dsprsrc

Attributes

Privilege	1-6
Jobs	No
Log	No
Node	BPX
Lock	No

Example

```
cnfrsrc 4.1 256 26000 1 e 512 16384 2 15 26000 100000
```

Description

Configure the VSI partition for port 4.1.

System Response

```

n4          TN      SuperUser      BPX 15      9.1      Apr. 4 1998 16:40 PST
Port/Trunk : 4.1
Maximum PVC LCNS:          256      Maximum PVC Bandwidth:26000
Min Lcn(1) : 0 Min Lcn(2) : 0
Partition 1
Partition State :          Enabled
Minimum VSI LCNS:          512
Maximum VSI LCNS:          7048
Start VSI VPI:             2
End VSI VPI :              15
Minimum VSI Bandwidth :    26000      Maximum VSI Bandwidth :      100000

Last Command: cnfrsrc 4.1 256 26000 1 e 512 7048 2 15 26000 100000

Next Command:

```

Table 17-4 cnfrsrc-Parameters

Parameter	Description
slot.port	Specifies the BXM card slot and port number.
Maximum PVC LCNS	<p>The maximum number of LCNs allocated for AutoRoute PVCs for this port. The range is 1 to 256. 256 is the default. For trunks, there are additional LCNs allocated for AutoRoute that are not configurable.</p> <p>You can use the dspcd <slot> command to display the maximum number of LCNs you can configure using the cnfrsrc command for the given port. For trunks, “configurable LCNs” represent the LCNs remaining after the BCC has subtracted the “networking LCNs” needed. A trunk has 270 networking LCNs, or channels.</p> <p>For a port card, a larger number is shown, as compared with a trunk card. This is because a trunk uses 270 networking LCNs, as compared with a port card, which uses no networking LCNs.</p> <p>Setting this field to “0” would disable AutoRoute PVCs on the specified port.</p> <p>Note that you must specify a value greater than 0 for the Maximum PVC LCNS, Maximum PVC Bandwidth, and Maximum VSI LCNS parameters. Otherwise, you will not be able to create any AutoRoute connections on a BXM card. Also, if these parameters do not have values greater than 0, you will be unable to change the connection channel amount when you configure the BXM trunk using cnftrk.</p>
Maximum PVC Bandwidth	<p>Specifies the maximum bandwidth of the port allocated for AutoRoute use. The range is 0 to 352207. 0 is the default. You can configure the Maximum PVC Bandwidth value for ports, but not for trunks.</p> <p>Note that you must specify a value greater than 0 for the Maximum PVC LCNS, Maximum PVC Bandwidth, and Maximum VSI LCNS parameters. Otherwise, you will not be able to create any AutoRoute PVCs on the BXM card.</p>
Configure Partition	Answer yes or no to begin configuring resources for the partition.
Partition ID	Specifies the ID number of the partition. 1 is the default. Always use 1 in Release 9.1.
Enable Partition	Answer yes or no to enable your configured partition.

Parameter	Description
Minimum VSI LCNs	<p>The minimum number of LCNs guaranteed for this partition. The range is 1 to 256. 0 is the default. The VSI controller guarantees at least this many connection endpoints in the partition, provided there are sufficient free LCNs in the common pool to satisfy the request at the time the partition is added. When a new partition is added or the value is increased, it may be that existing connections have depleted the common pool so that there are not enough free LCNs to satisfy the request. The BXM gives priority to the request when LCNs are freed. The net effect is that the partition may not receive all the guaranteed LCNs (min LCNs) until other LCNs are returned to the common pool.</p> <p>You can increase this value dynamically when there are enough unallocated LCNs in the port group to satisfy the increase.</p> <p>You may not decrease the value dynamically. All partitions in the same port group must be deleted first and reconfigured in order to reduce this value.</p> <p>To avoid this deficit condition, which could occur with maximum LCN usage by a partition or partitions, it is recommended that all partitions be configured ahead of time before adding connections. Also, it is recommended that all partitions be configured before adding a VSI controller using the addshelf command.</p>
Maximum VSI LCNs	<p>The total number of LCNs the partition is allowed for setting up connections. The min LCNs is included in this calculation. If max LCNs equals min LCNs, then the max LCNs are guaranteed for this partition.</p> <p>Otherwise, (max - min) LCNs are allocated from the common pool on a FIFO basis.</p> <p>If the common pool is exhausted, new connection setup requests will be rejected for the partition, even though the maximum LCNs has not been reached.</p> <p>You may increase this value dynamically when there are enough unallocated LCNs in the port group to satisfy the increase.</p> <p>You may not decrease the value dynamically. All partitions in the same port group must be deleted first and reconfigured in order to reduce this value.</p> <p>Different types of BXM cards support different maximum values. If you enter a value greater than the allowed maximum, a message is displayed with the allowable maximum value.</p> <p>Note that you must specify a value greater than 0 for the Maximum VSI LCNs, Maximum PVC Channels, and Maximum PVC Bandwidth parameters. Otherwise, you will not be able to add any connections on a BXM card.</p>
Start VSI VPI	<p>By default the TSC (for example, the 7200 or 7500 series router) will use either a starting VSI VPI of 1 or 2 for tag switching, whichever is available. If both are available, a starting VSI VPI of 1 is used. The VPI range should be 2-15 on a BPX 8620 VSI. The VSI range for tag switching on the BPX 8620 is configured as a VSI partition, usually VSI partition number 1. VSI VPI 1 is reserved for AutoRoute PVCs. (This restriction applies only to trunks, not to ports. For a port, you can use any VPI value.) For a port UNI, the VPI range is 1 to 255. For a port NNI, the range is 1 to 4095. For trunks that do not have AutoRoute configured, the VPI ranges are the same as for ports.</p> <p>The VSI partition for tag switching should start at VPI 2. If VPI 2 is not to be used, you can use the tag switching VPI interface configuration on the TSC to override the defaults.</p> <p>For trunks with AutoRoute configured, the range is 2 to 4095. Always set to 2 for trunks.</p>
End VSI VPI	<p>Two VPIs are sufficient for Release 9.1, although it may be advisable to reserve a larger range of VPIs for later expansion, for example, VPIs 2-15.</p> <p>The range is the <i><Start VSI VPI></i> value to 4095.</p>

Parameter	Description
Minimum VSI Bandwidth	The minimum port bandwidth that can be used by this partition in cells/second. The range is 0 to <Maximum Line Rate>. For example, the OC3 line rate is 352207. 0 is the default.
Maximum VSI Bandwidth	The maximum port bandwidth that can be used by this partition. This value is used for VSI Qbin bandwidth scaling. The range is 0 to <Maximum Line Rate>. For example, the OC3 line rate is 352207. 0 is the default.

delshelf

Deletes an interface shelf from a tiered network. The identifier for an interface shelf is either the trunk number or the name of the shelf. Normally, you execute **delshelf** only at the hub node, but on the IPX/AF or IGX/AF itself, **delshelf** has the single function of letting you turn off LMI if the trunk is not allowing communication. In contrast to the **deltrk** command, you can execute **delshelf** at any time if no connections terminate at the trunk.

Full Name

Delete an interface shelf.

Syntax

delshelf <trunk> | <shelf-name>

Related Commands

addshelf, **dspnode**

Attributes

Privilege	1
Jobs	Yes
Log	Yes
Node	IPX, IGX, BPX
Lock	Yes

Example 1

```
delshelf 4.1
```

Description

Delete shelf trunk 4.1 on an IPX/AF.

System Response

nmsbpx23 TN SuperUser BPX 15 9.1 Aug. 16 1997 13:26 PST

BPX Interface Shelf Information

Trunk	Name	Type	Alarm
1.3	AXIS240	AXIS	OK
11.2	A242	AXIS	OK

Last Command: delshelf A241

Shelf has been deleted

Next Command:

Table 17-5 delshelf-parameters

Parameter	Description
trunk or shelf name	Specifies the slot and port number of the trunk or the name of the interface shelf.

dnport

Deactivates (or “downs”) the specified ATM port. Before downing a port, you must remove all connections from the port.

Full Name

Down port

Syntax

dnport <port>

Related Commands

cnfport, dspport, upport

Attributes

Privilege	1–2
Jobs	Yes
Log	Yes
Node	BPX
Lock	Yes

Example 1

```
dnport 4.2
```

Description

Down port 4.2.

System Response

```
ca19          VT      SuperUser      BPX 15      9.1      Aug. 23 1997 19:49 GMT
```

```
ASI Port States
```

```
Port  State
```

```
4.1  ACTIVE
```

```
4.2  INACTIVE
```

```
Last Command: dsports
```

```
Next Command: dnport 4.2
```

Table 17-6 **dnport-Parameters**

Parameter	Description
port	Specifies the slot number and port number in the format <i>slot.port</i> .

dntrk

Downs a trunk, after which it no longer carries framing or statistics. Before you can down a trunk with **dntrk**, you must remove it must from the network with **deltrk** (or **delshef** in a tiered network).

Full Name

Down trunk

Syntax

dntrk <slot.port>[.vtrk]

Note No space exists between the port number and the “.” for the virtual trunk specification.

Related Commands

addtrk, **deltrk**, **uptrk**, **dsprks**

Attributes

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

Example 1

```
dntrk 9
```

Description

Deactivate trunk 9.

System Response

```

beta          TRM   YourID:1          IPX 32    9.1    Aug. 3 1997 10:53 MST

From Type    Current Line Alarm Status    Other End
13  T1/24    Clear - Line OK              alpha.14
15  T1/24    Clear - Line OK              gamma.15
20  T3/3     Major - AIT Missing          -

```

Last Command: dntrk 9

Next Command:

Table 17-7 dntrk-Parameters

Parameter	Description
slot.port	Specifies the physical trunk.

Table 17-8 dntrk-Optional Parameters

Parameter	Description
vtrk	Specifies a virtual trunk number (applies to BNI only). T3/E3 range is 1-32. OC3 range is 1-11.

dspnode

Displays a summary of the interface shelves.

The **dspnode** command can isolate the shelf where an alarm has originated. For example, when you execute **dspalms**, the display indicates the number of shelves with alarms but does not identify the shelves. Therefore, execute **dspnode** on the hub node to determine which interface shelf generated the alarm.

The first example shows a screen display with **dspnode** executed on a BPX node. The second example shows a screen with **dspnode** executed on an IGX/AF. When executed on an IPX/AF or IGX/AF, **dspnode** shows the name of the hub node and the trunk number. Note that, to execute a command from an IPX/AF or IGX/AF itself, you must either telnet to the shelf or use a control terminal attached to the shelf.

Full Name

Display node

Syntax

dspnode

Related Commands

addshelf, delshelf, dsptrk

Attributes

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

Example 1

dspnode

Description

Display information about the interface shelves (executed on the BPX hub node).

System Response

```
sw53          TN      SuperUser      BPX 15      9.1 July 21 1997 15:09 GMT
```

BPX Interface Shelf Information

Trunk	Name	Type	Alarm
1.1	sw89	IPX/AF	OK
1.2	SW93AXIS	AXIS	UNRCH
1.3	SW77AXIS	AXIS	MAJ
3.1	sw92	IPX/AF	OK
3.2	sw91	IPX/AF	OK
3.3	sw90	IPX/AF	OK
4.1	sw24	IPX/AF	MIN
4.3	sw25	IPX/AF	MIN

Last Command: dspnode

Next Command:

Example 2

dspnode

Description

Display information about the trunk to the hub node (executed on an IGX/AF).

System Response

```
sw141        TN      SuperUser      IGX 16      9.1 Aug. 20 1997 07:23 PDT
```

Switching Shelf Information

Trunk	Name	Type	Alarm
3	sw45	BPX	OK

Last Command: dspnode

Next Command:

dspqbin

The **dspqbin** command displays the qbin resources on the selected port.

Full Name

Display qbin

Syntax

dspqbin <slot number>.<port number> [qbin-id]

Note To display a specific Qbin configuration on the selected port, enter qbin-id as an optional parameter to the **dspqbin** command. For Release 9.1, use only Qbin 10 for VSI connections

Related Commands

cnfqbin

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	BPX
Lock	No

Example

```
dspqbin 13.1
```

Description

Display the current Qbin configuration on the OC3 trunk on port 1 of slot 13 on the BPX to support Tag Switching.

System Response

```
sw57          TN      SuperUser      BPX 15      9.1.1      Mar. 10 1997 10:41 GMT
```

```
Port/Trunk:      13.1      [ACTIVE  ]
Qbin Id :
Enable Qbin (Y/N) :
Minimum Bandwidth :
Qbin Discard threshold:
Low CLP threshold:      [80] %
High CLP threshold:      [80] %
EFCI threshold:      [30]%
```

```
Last Command: dspqbin 13.1
```

Table 17-9 **dspqbin-Parameters**

Parameter	Description
slot.port	Specifies the BXM card slot and port number.
Qbin ID	Specifies the ID number of the Qbin available for use by the TSC (Tag Switch Controller) for VSI. The range is 0 to 255. 0 is the default. Always use 10 in 9.1.

dsprsrc

The **dsprsrc** command displays the partition of all the resources on this port.

Full Name

Display resource

Syntax

dsprsrc <slot number>.<port number> [part-id]

Note To display a specific partition, part-id can be entered as an optional parameter for dsprsrc command.

Related Commands

cnfrsrc

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	BPX
Lock	No

Example

```
dsprsrc 13.1
```

Description

Display partition resources on the OC3 trunk on port 1 of slot 13 on the BPX to support Tag Switching.

System Response

```
sw57          TN      SuperUser      BPX 15      9.1.1      Mar. 10 1997 10:41 GMT
```

```
Port/Trunk:      13.1      [ACTIVE ]
Interface:       OC3-2
Available Channels: 16000
```

```
Maximum PVC Channels      : 256 (default)
Maximum PVC Bandwidth    : 352207 cps

Partition ID              : 0
VSI Signalling VCI       : 32 (default)
Minimum VSI LCNs         : 0
Maximum VSI LCNs        : 0
Start VSI VPI            : 0
End VSI VPI              : 0
Minimum VSI Bandwidth    : 0 cps
Maximum VSI Bandwidth    : 0 cps
```

```
Last Command: dsprsrc 13.1
```

Table 17-10 dsprsrc-Parameters

Parameter	Description
slot.port	Specifies the BXM card slot and port number.
Partition ID	Specifies the ID number of the partition available for use by the TSC (Tag Switch Controller) for VSI. The range is 0 to 255. 0 is the default. Always use 0 in 9.1.

upport

Activates a single port on an ASI. If the port has not been configured, the default configuration values are used to configure the port.

Full Name

Up port

Syntax

upport <slot.port>

Related Commands

dnport, cnfport, upln

Attributes

Privilege	1-2
Jobs	Yes
Log	Yes
Node	BPX
Lock	Yes

Example 1

```
upport 4.2
```

Description

Activate port 2 on the ASI in slot 4.

System Response

```
ca19          VT      SuperUser      BPX 15      9.1      Aug. 23 1997 19:17 GMT
```

```
Port:         4.2      [ACTIVE ]
Interface:    T3-2
Type:         UNI
Speed:        96000 (cps)
```

```
CBR Queue Depth:          200
CBR Queue CLP High Threshold: 80%
CBR Queue CLP Low Threshold: 60%
CBR Queue EFCI Threshold: 80%
VBR Queue Depth:         1000
VBR Queue CLP High Threshold: 80%
VBR Queue CLP Low Threshold: 60%
VBR Queue EFCI Threshold: 80%
ABR Queue Depth:          9800
ABR Queue CLP High Threshold: 80%
ABR Queue CLP Low Threshold: 60%
ABR Queue EFCI Threshold: 80%
```

```
Last Command: upport 4.2
```

```
Next Command:
```

Table 17-11 upport-Parameters

Parameter	Description
slot.port	Specifies the slot number of the ASI card and the port to activate.

uptrk

Activates (or “ups”) a trunk and, if you include the optional *vtrk* parameter for applicable cards, activates the trunk as a *virtual* trunk.

After you have upped the trunk but not yet *added* it, the trunk carries line signalling but does not yet carry live traffic. Before you add the trunk with **addtrk**, the node can monitor the trunk for reliability. Once a trunk has shown reliability and is ready to go into service, add the trunk to the network. If you need to take an active trunk out of service, use **dntrk**. The **dntrk** command causes the node to reroute any existing traffic if sufficient bandwidth is available.

You cannot mix physical and virtual trunk specifications. For example, after you up a trunk as a standard trunk, you cannot add it as a virtual trunk when you execute **addtrunk**. Furthermore, if you want to change trunk types between standard and virtual, you must first down the trunk with **dntrk** then up it as the new trunk type.

You cannot up a trunk if the required card is not available. Furthermore, if a trunk is executing self-test, a “card in test” message may appear on-screen. If this message appears, re-enter **uptrk**.

Full Name

Up trunk

Syntax

```
uptrk <slot.port>[.vtrk]
```

Related Commands

addtrk, **dntrk**

Attributes

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

Example 1

```
uptrk 21
```

Description

Activate (up) trunk 21—a single-port card, in this case, so only the slot is necessary.

Example 2

```
uptrk 6.1.1
```

Description

Activate (up) trunk 6.1.1—in this case, a virtual trunk, as indicated by the third digit.

Table 17-12 uptrk-Parameters

Parameter	Description
slot.port	Specifies the slot and port of the trunk to activate. If the card has only one port, the <i>port</i> parameter is not necessary. An NTM, for example, has one port.

Table 17-13 uptrk-Optional Parameters

Parameter	Description
vtrk	Specifies the virtual trunk number. The maximum on a node is 32. The maximum on a T3 or E3 line is 32. The maximum for user traffic on an OC3/STM1 trunk is 11 (so more than one OC3/STM1 may be necessary).

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