Cisco WAN Switching Command Reference

Release 8.2.5

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Cisco WAN Switching Command Reference

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Preface

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

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM, a member of the Cisco Connection Family, is updated monthly. Therefore, it might be more up-to-date than printed documentation. To order additional copies of the Documentation CD-ROM, contact your local sales representative or call customer service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at http://www.cisco.com, http://www-china.cisco.com, or http://www-europe.cisco.com.

Objectives

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

Audience

The Cisco WAN switching command line interface lets you control the network from a level somewhat below that provided by StrataView Plus. Therefore, this document helps network designers and operators to set up, manage, and troubleshoot networks.

About the Cisco WAN Switching Product Name Change

The Cisco WAN Switching products have new names. The BPX switch is now called the Cisco BPX® 8620 wide area switch, The AXIS shelf is now called the Cisco MGX™ 8220 edge concentrator, Any switch in the IGX switch family (IGX 8, IGX 16 and IGX 32 wide area switches) is now called the Cisco IGX™ 8400 series wide area switch. 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.

Organization

The major sections of this publication are as follows:

- Chapter 1, “About This Manual”
- Chapter 2, “IPX, IGX, and BPX Fundamentals”

- Chapter 3, “Basic Commands”
- Chapter 4, “Setting Up Network Nodes”
- Chapter 5, “Setting Up Trunks”
- Chapter 6, “Setting Up Lines”
- Chapter 7, “Voice Connections”
- Chapter 8, “Data Connections”
- Chapter 9, “Frame Relay Connections”
- Chapter 10, “ATM Connections”
- Chapter 11 “Optimizing Traffic Routing and Bandwidth”
- Chapter 12, “Synchronizing Network Clocks”
- Chapter 13, “Managing Structured Networks”
- Chapter 14, “Managing Jobs”
- Chapter 15, “Managing the Network”
- Chapter 16, “Troubleshooting”
- Chapter 17, “Access Device Commands on a Node”
- Appendix A, “Command Listing”

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 *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

Timesaver Means *the described action saves time*. You can save time by performing the action described in the paragraph.

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

Warning This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and familiar with standard practices for preventing accidents. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the product.)

CHAPTER 1

About This Manual

This manual describes the IPX/IGX/BPX user-commands for System Software Release 8.2.5. These commands configure, monitor, and manage a network consisting of IPX, IGX, or BPX nodes. (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 Cisco WAN Switching network usage. For example, Chapter 5, "Setting Up Trunks" contains the commands that apply to setting up and configuring trunks in the network (except for trunks between an MGX 8220 edge concentrator and a BPX node). Some commands apply to more than one category. The **addcon** command is an example of this. Four chapters contain descriptions of **addcon** usage. The locations of each single and multi-application command appear in Appendix A. This appendix contains a quick-reference, alphabetical listing of commands with page numbers. The following list describes each chapter:

About This Manual	Introduction to this manual and the layout of the command definitions.
IPX, IGX, and BPX Fundamentals	Information on how to use the control terminal and enter commands.
Basic Commands	Commands that provide an interface between the user and the network. Examples are Clear Screen and Add a User.
Setting Up Network Nodes	Commands that display and set up node configurations. Examples are Add Alarm Slot and Configure Node Name.
Setting Up Trunks	Commands that set up and display the network trunks, interface shelves, and topology. Examples are Configure Trunk and Display Network.
Setting Up Lines	Commands that set up and display circuit lines. Examples are Up Circuit Line and Configure Circuit Line.
Voice Connections	Commands that set up, configure, and display voice connections. Examples are Display Channel Dial Type Configuration and Configure Adaptive Voice.
Data Connections	Commands that set up, configure, and display data connections. Examples are Add Connection and Delete Connection.
Frame Relay Connections	Commands that set up, configure and display frame relay connections. Examples are Display Connections and Configure Frame Relay Port.

ATM Connections	Commands that set up, configure, and display ATM connections. Examples are Add Connection and Display Connection Class**s**.
Optimizing Traffic Routing and Bandwidth	Commands that control the intra-node routing and trunk bandwidth allocation. An example command is Configure Class of Service.
Synchronizing Network Clocks	Commands that control the clocks and synchronization throughout the network. Examples are Clear Line Clock Alarm and Display Current Clock Source.
Managing Structured Networks	Commands that set up and display network domains and junction nodes. Examples are Display Domains and Display Junction Network.
Managing Jobs	Commands that define, start and stop jobs, and job triggers. Examples are Add Job and Delete Job Trigger.
Managing the Network	Commands for site administration of the IPX/IGX/ BPX network. Examples are Configure User Password and Configure Time.
Troubleshooting	Commands associated with troubleshooting aids such as alarms and loopbacks. Examples are Add Alarm Slot and Configure Trunk Alarm.
Access Device	Commands that make an access device recognized and configurable on a node. The chapter consists of command descriptions that are unique to access devices and descriptions of commands that are similar for other technologies.
Appendix A	Alphabetical listing of commands shows the chapter and page number of the command description. This includes multiple listings, in which case the description appears in more than one chapter because of its application.

Chapter Organization

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

Description

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. Upon command entry at the control terminal, the system usually prompts for individual parameters. Use the Parameter and Optional Parameter summaries to determine which values to enter.

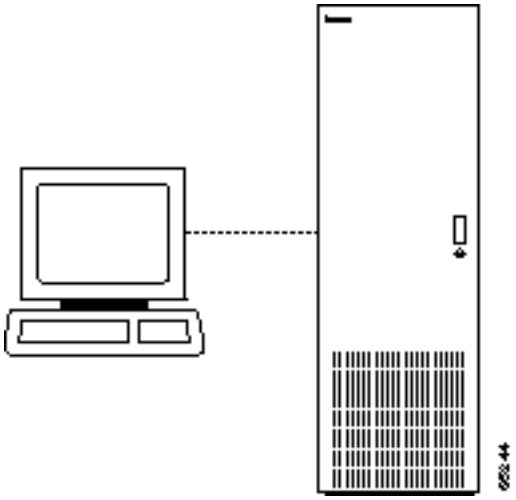
Parameters

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).

IPX, IGX, and BPX Fundamentals



A workstation or a PC can function as a control terminal for an IPX, IGX, or BPX node through an RS-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 at the accessed node can begin. 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    8.2    Mar. 15 1996  13:47 CST




Enter User ID:
```

To collect statistics, the StrataView Plus workstation must operate in StrataView mode, not terminal mode. A PC-type terminal always operates in terminal mode.

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 command execution. This could be, for example, configuration information 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 duplicated them above the command entry line to serve as a record of the entries. The bottom area also shows the last entered command.

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 command entry for those who are unfamiliar with Cisco WAN Switching equipment. It also describes the online help for the commands.

Each user command can have one or more privilege levels. Entry of 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.

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 online 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:

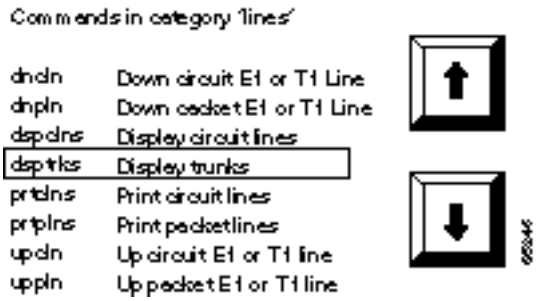
Step 1 At the **Next Command** prompt, either press the Escape key or enter the word **help** or a question mark. A list of command categories appears as in the example below.

```
gamma          TRM   YourID:1        IPX 16    8.2     Mar. 15 1996 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 wish to enter (**dsptrks** 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 2-1 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 2-1 lists and describes the command categories.

Table 2-1 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 circuit lines display the status of lines.
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 2-2 lists the command-related abbreviations.

Table 2-2 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)
	d	Data
	date	Date
	dfm	DFM
	dial	Dial
	dl	Dial type

Format	Mnemonic	Descriptor
Nouns (continued)	dsc	Descriptor
	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
	slot	Slot
	snmp	SNMP
	src(s)	Source(s)
	st	Status

Format	Mnemonic	Descriptor
Nouns (continued)	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. Press the **Ctrl** and **A** keys simultaneously to copy the command to the new command line. You can edit the command line and then press the **RETURN** key, to execute the previous command. 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 **.** 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 (**bye**), the command list is cleared.

In Case of a Mistake

Before you press the Return key, you can use control keys to edit a typed command. Table 2-3 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 on your terminal, check to see which key performs the function.

Table 2-3 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	*	Leave 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 flow of data from the IPX node to the terminal screen.
	Ctrl-Q	Restarts the flow of data from the IPX.
Miscellaneous (continued)	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 for command usage by the System Manager. 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.

Commands supported by release 8.2

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, and E1 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 WAN Switching TAC. The features that fall into this category are:

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

Help

The system software itself provides a command help function. This function resides in system software and consists of a list of all commands and a display of the command syntax. Entering “help” or “?” with no parameters displays a list of the seven command categories. These categories are listed below. Entering “help” and a command name displays the command syntax. Entering “help” and the few letters of a command lists all commands containing these characters. For example, “help fr” will list all commands containing the letters “fr”. A particular command can then be selected 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 *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 2-4 lists the format conventions for the name of trunks, lines, and channels.

Table 2-4 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)	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: addcon 6.1.101 beta 4.1.102 2 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: addcon 6.1.100 gamma 6.2.102 2 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.

Trunk, line, or channel	Description
Frame relay channel numbers (Global Addressing)	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: 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) 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. For information on adding frame relay connections through a FastPAD, refer to the command descriptions in Chapter 18 and the *FastPAD Users s Guide*.

Basic Commands

The *user interface* commands provide access to an IPX, IGX, or BPX switch through the control terminal. These commands give help on command usage, 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, enter the following for a list of all commands that contain the string “fr”:

```
? 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.

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 15, 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 **v**t 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 3-1 lists the commands discussed in the previous sections. Descriptions of these commands make up the rest of this chapter.

Table 3-1 List of Basic Commands

Mnemonic	Description	Page
.	Display command history	3-4
help or **?**	Help	3-6
bye	End user session	3-9
clrscrn	Clear screen	3-11
prtscrn	Print screen	3-12
redscrn	Redraw screen	3-13
vt	Make a virtual terminal connection	3-14

. (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

.

Related Commands

None

Attributes

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

Example 1 Description

.

Display a command history.

System Response

```
gamma          TRM   YourID:1        IPX 16    8.2    Mar. 15 1996 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

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.” Commands in this list are selectable by using arrow keys then the Return key.

Full Name

Help command

Syntax

?	[command name | character string
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.

System Response

```
gamma          TRM   YourID:1        IPX 16    8.1.B0    Mar. 15 1994 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: help


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

Example 2 Description

help cnflan

Display syntax information on how to enter a specific command.

System Response

```
beta           TRM   YourID:1        IPX 32    8.1.B0    Mar. 15 1994 14:42 MST

cnflan           - Configure LAN Interface
Cannot be included in Jobs.
Usage: cnflan <IPAddr> <IPSubnetMask> <TCPServicePort> <GatewayIPAddr>









Last Command: help cnflan


Next Command:
```

Example 3

help fr

Display all commands that have “fr” in their name (all 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.

Parameter

Description

command

Specifies a command.

string

Specifies a character string for 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    8.2       Mar. 15 1996 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    8.2    July 15 1996 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, and BPX
Lock	Yes

Example 1

prtscrn

Description

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

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 **vt** 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."

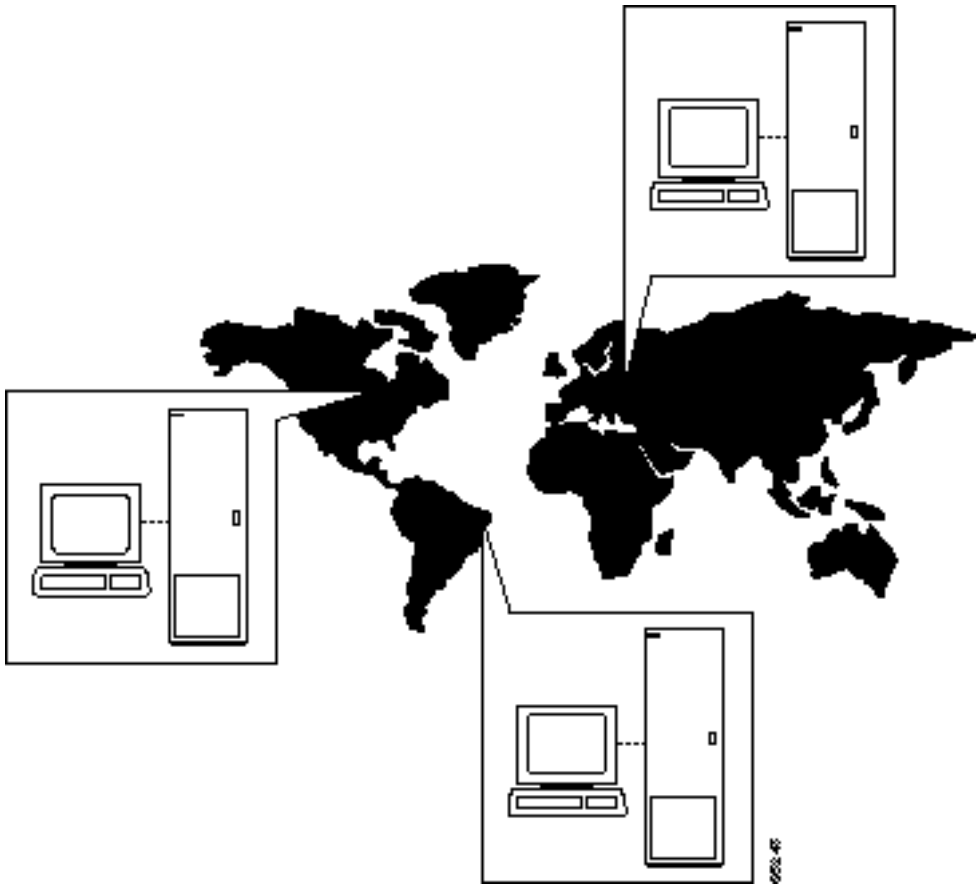
System Response

```
sw115          VT    SuperUser       BPX 15    8.2       July 15 1996 16:59 PDT









Last Command:

Next Command:

Virtual Terminal      CD
```

Table 3-2 vt-Parameters

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 Network Nodes



This chapter describes the commands for setting up an IPX, IGX, or BPX node. You must set up each node before you build the network. Sections with task descriptions and command summaries appear before the full command descriptions. The task descriptions tell you how to:

- Configure a node name and time zone
- Add and remove a network node
- Add and remove and 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 be set to a time zone. To set the time zone for the node to **G**reenwich **M**ean **T**ime, 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 routing hub in a tiered network. An interface shelf is either an IPX node configured as an interface shelf (IPX/AF) or an MGX 8220 edge concentrator. For an IPX or IGX node to serve as an interface shelf, Cisco personnel must first configure it for that purpose. Furthermore, the shelves must be configured to use STI cell headers and BPX Addressing Mode (BAM). An MGX 8220 must have been brought up in the network before you can add it to the tiered network (for instructions, see the MGX 8220 reference documentation.) To add a feeder shelf, use **addshelf**. To delete a feeder shelf, use **delshelf**. To view conditions on a feeder trunk, use **dspnode**. Note that **addshelf** and **addtrk** are mutually exclusive commands.

Specifying Card Redundancy

Redundancy is established by installing two identical front and back card sets, connecting them with a Y-cable for each paired port, then specifying redundancy with the **addyred** command. The commands for setting up and displaying card redundancy are **addyred**, **delyred**, **dspyred**, and **prtyred**. Redundancy applies to the entire card and is not port or line-specific.

During normal operation, the primary set is "active" and carrying traffic, while the secondary set is in "standby." The primary set determines the configuration of the pair, so the secondary and primary card sets have the same configuration. If the primary is reset or otherwise becomes inactive, 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
- 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 AIT-T3 or AIT-E3 back card
- ALM and a BC-UAI 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-T3 back card

BPX card sets may consist of the following:

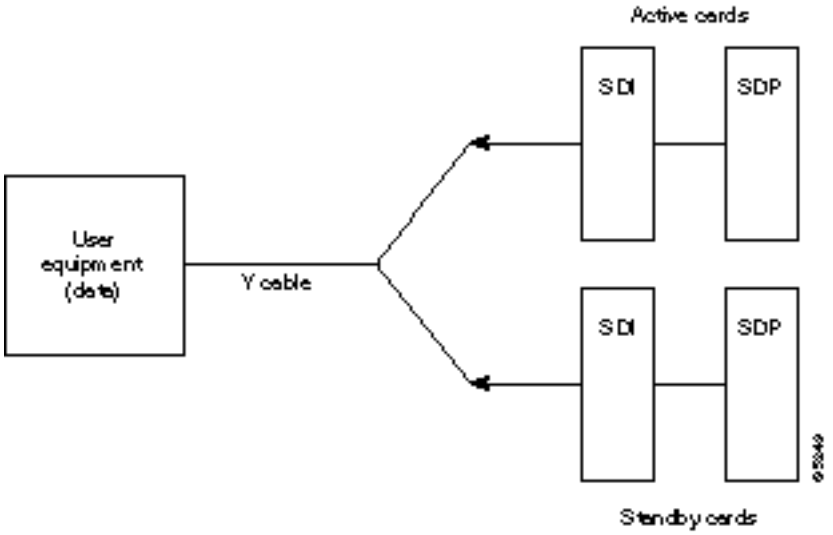
- BCC front card
- BNI front card and T3, E3, or OC3 back card
- ASI front card and T3, E3, or OC3/STM-1 back card

The following applies 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, 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 5 "Setting Up Trunks" for a description)

Figure 4-1 illustrates a typical Y-cable connection of primary and secondary card sets.

Figure 4-1 Y-Cable Connection



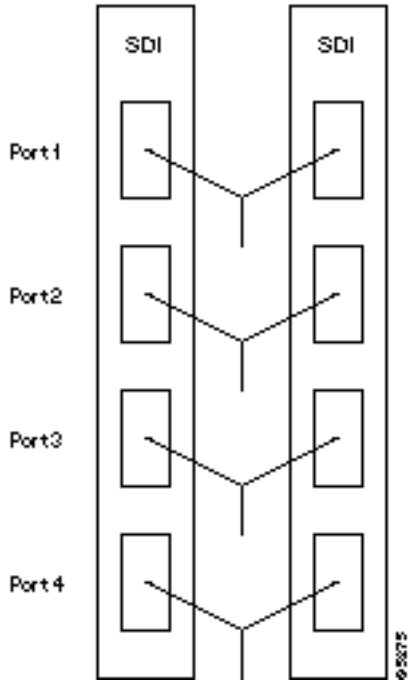
As depicted in the illustration above, the single end of a Y-cable goes to the user equipment. One of the two connectors at the split end goes to the primary back card, and the other connector goes to the secondary back card.

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

Note Terminating connections is possible at a primary slot only 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 4-2 illustrates the cabling for a multi-port card set.

Figure 4-2 Y-Cables on Multiple Ports



If the secondary card set becomes active, the primary card set becomes the backup. For the primary card set to serve as a backup, it must be a complete set and not have failed status. These requirements apply to single and multi-port cards.

The **addyred** command is applicable even if the primary and secondary slots are empty. If cards are in place 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 **dspyred** description for details. V.35 redundancy requires special redundant jumpers on the SDI or FRI cards that are Y-cabled together. 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 (RS-232) port or Aux Port (RS-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 4-3, Figure 4-4, Figure 4-5, Figure 4-6, and Figure 4-7 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 4-3 Setting Up Nodes

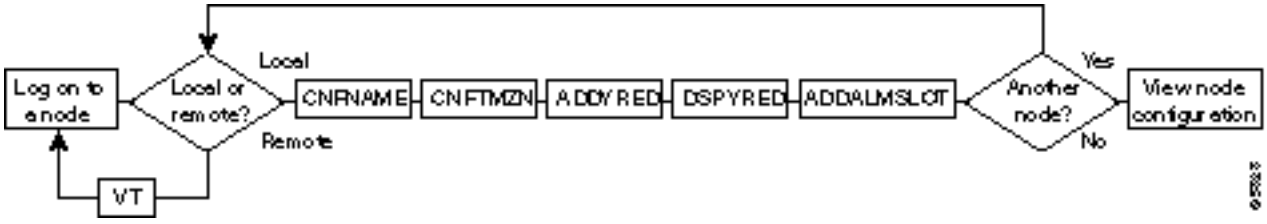


Figure 4-4 Viewing the Node Configuration

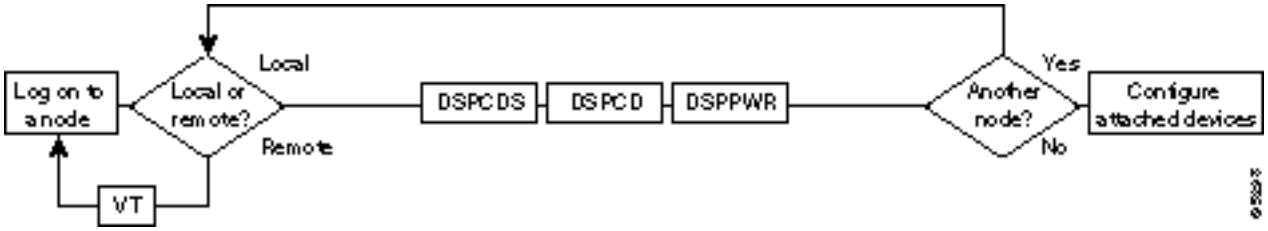


Figure 4-5 Configuring the Node Interface for a Local Control Terminal

Figure 4-6 Removing a Node From the Network

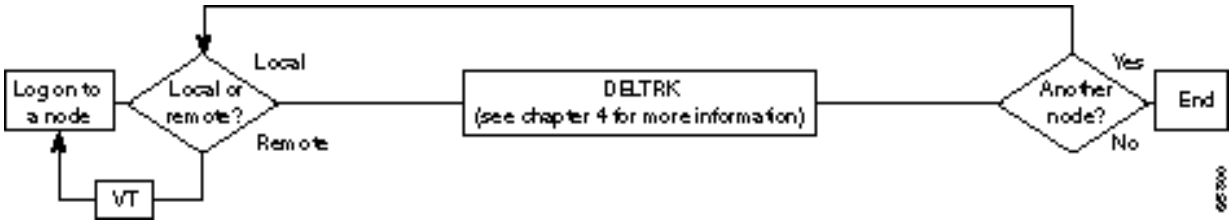


Figure 4-7 Add an Interface Shelf to the Network

Summary of Commands

Table 4-1 shows the command name and starting page for the description of each node command.

Table 4-1 Commands for Setting Up a Node

Mnemonic	Description	Page
addalmslot	Add an alarm slot	4-9
addshelf	Add a trunk between the hub node and access shelf.	4-11
addyred	Add Y-cable redundancy	4-13
cnfasm	Configure ASM card	4-15
cnffunc	Configure system function	4-17
cnfname	Configure node name	4-20
cnfprt	Configure printing functions	4-22
cnfterm	Configure terminal port	4-24
cnftermfunc	Configure terminal port functions	4-26
cnftmzn	Configure time zone	4-29
delalmslot	Delete alarm slot	4-31
delshelf	Delete a trunk between a hub node and access shelf	4-33
delyred	Delete Y-cable redundancy	4-35
dspasm	Display ASM card configuration	4-36
dspcd	Display card	4-38
dspcds	Display cards	4-40
dsplancnf	Display LAN configuration	4-43
dsplmistats	Display LMI Statistics	4-45
dspnds	Display nodes	4-47
dspnode	Display summary information about interface shelves	4-49
dsptermcnf	Display terminal configuration	4-51
dsptermfunc	Display terminal port configuration	4-53
dspprtcnf	Display print configuration	4-55
dsppwr	Display power supply status	4-57
dspyred	Display Y-cable redundancy	4-59
prtyred	Print Y-cable redundancy	4-61
upcd	Up card	4-63
window	Window to external device	4-65

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    8.2      Mar.  3 1996 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 4-2 addalmslot Parameters

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

addshelf

Adds a trunk between a hub node and an interface shelf in a tiered network. The hub must be a BPX.

The interface shelf can be either an MGX 8220 shelf or an IPX node that Cisco has configured as an interface shelf. Because tiered network capability is a paid option, personnel in the WANBU TRT must telnet to the unit and configure it as an interface shelf before you can execute **addshelf**.

Each IPX/AF or MGX 8220 shelf has one trunk that connects to the BPX node serving as an access hub. A hub can support up to 16 T3 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 **addtrk**). When you execute **uptrk**, specify the STI header format and BPX Addressing Mode (BAM) mode. Also, a trunk must be free of major alarms before you can add it with the **addtrk** command.

Full Name

Add a feeder shelf.

Syntax

addshelf <trunk> <shelf-type> <vpi> <vci>

Related Commands

delshelf, dspnode, dsptrk

Attributes

Privilege	1–4
Jobs	Yes
Log	Yes
Node	BPX
Lock	No

Example 1

addshelf

Description

Add trunk 11.1 as an MGX 8220 interface shelf. After the addition, the screen displays confirmation of the addition and shows the name of the shelf. The example already shows the name of the MGX 8220 at trunk 11.2 is A242.

System Response

```
nmsbpx23       TN    SuperUser       BPX 15    8.2    Aug. 16 1996 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), A (AXIS)
```

Table 4-3 addshelf Parameters

Parameter	Description
trunk	Specifies the slot and port number of the trunk.
shelf type	Specifies the type of interface shelf. I = IPX/AF. A = MGX 8220.
vpi vci	Specifies the Annex G vpi and vci. For the MGX 8220 interface shelf, the range for vpi is 5–14. For vci, the range is 16–271. For an IPX/AF, the range for both vpi and vci is 1–255.

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.
- 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    8.2    Mar. 15 1996 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 4-4 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

Allows the user to set various configurable parameters associated with the BPX Alarm and Status Monitor card in slot 15. Since this card is always 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  8.2   Mar. 30 1996 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:
```

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

```
sw83           VT    SuperUser       IPX 16    8.2       May  20 1996 13:35 PST

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     Enabled   Download From Remote StrataView
9     Enabled   Node-by-node Upgrade Compatibility
10    Disabled  Logging of conn events in local event log
11    Disabled  Logging of conn events in SV+ event log


This Command: cnffunc


Enter index:
```

Table 4-5 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 circuit line or trunk. Used to check the health of the back card alarm detection circuitry.	**enabled**
2	FDP Loopback button	For IPX/IGX, enables loopback button on SDP 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 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; others are discarded.	**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 SV+ not directly connected to the node.	**disabled**
9	Node-by-node Upgrade Capability		**enabled**
10	Logging of connection events in local event log		**disabled**
11	Logging of connection events in SV+ event log		**disabled**

Table 4-6 cnffunc Parameters

Parameter	Description
e/d	Enables or disables the previous functions.

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, cnfprt, and window

Attributes

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

Example 1

cnfname alpha

Description

Name is changed to alpha. The network topology screen displays indicating the new name. See the dspnw command for more information on the network topology screen.

System Response

```
alpha          TRM   YourID:1        IPX 16  8.2    Mar. 15 1996 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  8.2    Mar. 15 1996 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 4-7 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 only valid 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 RS-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 RS-232 device. The auxiliary port may connect to either a printer or an external RS-232 device. Once the data transmission parameters have been set for a port, use the **cnftermfunc** command 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, cnfprt, and 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  8.2    Mar. 15 1996 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 4-8 cnfterrm Parameters

Parameter	Description
a/c	specifies the port to be configured, where a is the auxiliary port and c is the control port
baud rate	specifies the baud rate. Valid baud 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 seven bits for each character; an “8” indicates eight 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 entirely

cnftermfunc

Configures port functions for the IPX, IGX, or BPX control and auxiliary ports. The IPX and IGX nodes support two RS-232 asynchronous serial ports on the SCC and SCM, respectively. The BPX node supports two RS-232 asynchronous serial ports on the LMBCC. In all cases, the top port is the CONTROL TERMINAL port, and the lower port is the AUX PORT. Depending on the desired network configuration, the CONTROL TERMINAL port can connect to a control terminal, StrataView, a direct dial-in modem, or any external RS-232 device. The AUX PORT can connect to a printer, an auto-dial modem to call a control center, or any external RS-232 device.

The interface specified for the port must match the equipment physically attached to the port. The baud rate and other data transmission parameters for the port are set with the **cnfterm** command. If either port is configured as an external device window, enter the **window** command to begin a session with the external device.

If the auxiliary port is configured as an autodial modem, designate a “network ID” and a “phone number”. Configuring the auxiliary port for an autodial modem enables the following to occur: When a change in alarm status happens anywhere in the network, the autodial modem attached to the auxiliary port dials the specified “phone number”. If the call goes to the Cisco TAC, the alarm is logged under the specified “network ID”. With this log, TAC engineers are automatically notified of any problems that occur on the network.

Full Name

Configure terminal port functions

Syntax

cnftermfunc <a/c> <index> [escape_string | (Network_ID Dial_String)]

Related Commands

cnfterm, cnfprt, dsptermfunc

Attributes

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

Example 1

cnftermfunc

Description

Configures an IPX, IGX, or BPX node control or auxiliary port.

System Response

```
beta           TRM   YourID:1        IPX 32  8.2    Mar. 15 1996 14:46 MST


Control portAuxiliary port
1.VT100/StrataView1.Okidata 182 Printer
2.VT100       2.Okidata 182 Printer with LOG
3.External Device Window3.Alarm Message Collector
4.External Device Window
5.Autodial Modem
6.VT100









Last Command: cnftermfunc

Next Command:









Last Command: dsplancnf

Next Command:
```

Example 2

cnftermfunc a TheCustomer 18007674479

Description

Configure an auxiliary port by issuing parameters. The port configuration screen appears with "Autodial Modem" highlighted to indicate that this interface has been chosen for the auxiliary port. When an alarm occurs on the network, the modem will dial 18007674479 to reach the Cisco TAC. The alarm will be logged on the TAC computer under the name "TheCustomer".

Table 4-9 cnftermfunc Parameters

Parameter	Description
a	Specifies that the auxiliary port will be configured.
c	Specifies that the control port will be configured.

Table 4-10 cnftermfunc Index Parameters

Index	Description
Control port	1.VT100/StrataView
	2.VT100
	3.External device window
Auxiliary port	1.Okidata 184 printer
	2.Okidata 184 printer with LOG
	3.Alarm message collector
	4.VT100
	5.Autodial modem
	6.VT100

Table 4-11 cnftermfunc Optional Parameters

Parameter	Description
escape string	Specifies a string of 1 to 8 characters used to terminate a session with an external device. This parameter is valid only for "External Device Window" interfaces. The default escape string is "quit."
network id	Specifies a string of 1 to 12 characters used to identify the network during an autodial connection to theCisco TAC. This parameter is valid only for "Autodial Modem" interfaces. Any alarm status change in the network is automatically logged at the Cisco TAC using this network ID. Contact the Cisco TAC for the ID to use.
dial string	Specifies the telephone number to be dialed when the network is reporting alarm status changes via the autodial modem. This parameter is valid only for "Autodial Modem" interfaces. The "phone number" can be up to 16 characters long and normally consists of digits and commas only. A comma is used to indicate that the autodial modem should pause two seconds before continuing to dial. For example, the number "9,4083700736" would cause the modem to dial a "9", pause two seconds, then dial the remaining digits. Contact the Cisco TAC for the number to use.

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  8.2    Mar. 15 1996 13:19 PST









Last Command: cnftmzn pst

Next Command:
```

Table 4-12 cnflmzn Parameters

Parameter	Description	
time zone	• 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** command 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    8.2       July 16 1996 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 4-13 delamslot 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 of the name of the shelf. Normally, you execute **delshelf** only at the hub node, but on the IPX/AF itself, **delshelf** just lets you turn off LMI if the trunk is not allowing communication. In contrast to **deltrk**, 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    8.2    Aug. 16 1996 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 4-14 delshelf parameters

Parameter	Description
trunk or shelf name	Specifies the trunk or 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 card set is complete 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. The ASM alarms are configured with the **cnfasm** command (SuperUser level)

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

```
D1.jea         TRM   SuperUser       BPX 15    8.2    Mar. 30 1996 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, serial number appear. 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     8.2       Aug. 13 1996 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 the ALM/B.

System Response

```
IGX32          TN    SuperUser       IGX 32    8.2 Nov. 12 1996 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:
```

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 an IPX 32 or IGX 32 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* — Incompatible version of old software 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 [l]

Related Commands

dncd, dspcds, 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    8.2 Nov. 12 1996 18:39 PST


   FrontCard  BackCard                        FrontCard  BackCard
   Type  Rev  Type     Rev  Status            Type  Rev  Type     Rev  Status
1  NPM   A0205             Active-T     9  Empty universal backplane
2  Empty reserved for NPM                 10 Empty universal backplane
3  FRM   ESP  FRI-T1   AC   Active       11 ALM   B0305UAI-T3   HN   Active
4  Empty universal backplane              12 Empty
5  Empty universal backplane              13 Empty universal backplane
6  ALM   B0310UAI-T3   HN   Active       14 BTM   BFF  BTM-T3   P02  Standby
7  Empty universal backplane              15 Empty universal backplane
8  Empty universal backplane              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    8.2    Mar. 15 1996 14:37 MST

Missing Cards: 1 ATM, 1 T3

   FrontCard  BackCard          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:
```

Table 4-15 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 description of the **cnflan** command has an explanation of the items that appear in the **dsplancnf** display.

Full Name

Display LAN interface configuration

Syntax

dsplancnf

Related Commands

cnflan

Attributes

Privilege	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

```
sw81           TN    SuperUser       BPX 15    8.2       May  21 1996 10:51 PST

Active IP Address:                     192.187.210.139
IP Subnet Mask:                        255.255.255.0
IP Service Port:                       5120
Default Gateway IP Address:            192.187.210.1
Maximum LAN Transmit Unit:             1500
Ethernet Address:                      00.C0.43.00.06.91

Type      State
LAN       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 interface shelf to the hub node. To execute this command from the IPX/AF, the user must telnet to the IPX/AF. This command can provide information to help analyze problems that may arise while setting up a tiered network.

Full Name

Display Annex G LMI statistics

Syntax

dsplmistats

Related Commands

none

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	IPX/AF
Lock	No

Example 1

dsplmistats

Description

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

System Response

```
batman               SuperUser       IPX/AF    8.2      Jan. 30 1996 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 domain of the node executing the command. The nodes are grouped per domain, with one domain per display. The remote node alarm status is provided only on a domain basis. Therefore, the user must virtual terminal (vt) to the remote node to get specific 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 domain.

System Response

```
alpha          TRM   YourID:1        IPX 16  8.2    Mar. 23 1996 09:42 PST

NodeName Alarm
alpha    MAJOR
beta     MAJOR
gamma    MAJOR




Last Command: dspnds


Next Command:
```

Table 4-16 dspnds Optional Parameters

Parameter	Description
+n	The node number, which requires super user privilege to assign.
-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.”
domain number	Specifies the number of a domain to display. The range for *domain number* is 1–8. Only the nodes within the specified domain are displayed. If the number does not match a valid domain number, the message "No domain with this number" is displayed.

dspnode

Displays a summary of the interface shelves.

This command can isolate the shelf where an alarm has originated. The routing nodes in a network do not indicate the interface shelf where an alarm condition exists, so execute **dspnode** on a hub node to find out which interface shelf originated 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 IPX/AF. When executed on an IPX/AF, **dspnode** shows the name of the hub node and the trunk number. Note that to execute a command on an IPX/AF, you must either use an attached control terminal or telnet to the IPX/AF.

Full Name

Display interface shelves.

Syntax

dspnode

Related Commands

addshelf, delshelf, dsptrk

Attributes

Privilege	1–6
Jobs	No
Log	No
Node	IPX/AF, BPX
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    8.2     July 21 1996 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 IPX/AF).

System Response

```
sw24           TN    SuperUser       IPX 8     8.2    July 24 1996 10:59 GMT

                        BPX Switching Shelf Information

Trunk    Name      Type      Alarm
   8     sw53      BPX       MAJ









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 using the **cnfterm** command.

Full Name

Display terminal port configurations

Syntax

dsptermcnf

Related Commands

cnfterm, cnftermfunc, 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    8.2       Mar. 26 1996 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.

System Response

```
swstorm        TN    SuperUser       BPX 15    8.2      Mar. 23 1996 09:42 PST


Control port                           Auxiliary port

1. VT100/StrataView                    1. Okidata 182 Printer
2. VT100                               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 this node name is flashing, the node is unreachable.

The **dspprtcnf** command displays the current print configuration for the domain where the command is entered. Printing cannot occur across a junction node. Each domain must be configured with a printer for this feature to print whenever needed.

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    8.2       Mar. 22 1996 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    8.2       May  21 1996 13:13 PST

         Power Status                                      Cabinet Temperature

ASM Status: Active                                            22        71

Power voltage A/B:      0 / 49 V                          C  60  |  |  140  F
                                                          e      |  |       a
PSU  Ins Type Rev SerNum Failure                          n  50  |--|  122  h
 A    N  N/A  N/A   N/A    N/A                            t      |  |       r
 B    Y  240V  0C 29959   None                           i  40  |  |  104  e
                                                          g      |  |       n
            Fan Status                                    r  30  |  |  86   h
                                                          a      |  |       e
     FAN   1    2    3                                    d  20  |  |  68   i
         3300 3360 3240 RPM                               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    8.2    Mar. 15 1996 14:28 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: 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, the cards are the HDM, LDM, CVM, FRM, FTM, NTM and BTM. On a BPX, 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    8.2    Mar. 15 1996 14:28 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: prtyred


Next Command:
```

upcd

Activates a card you have downed with the **dncd** command. (The 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    8.2 Dec. 30 1996 21:15 GMT


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


Last Command: upcd 10


Next Command:
```

Table 4-17 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 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/BPX node "bundles" 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 all external devices from a single point in the network.

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 Echos to 192.9.202.1, timeout is 2 seconds:

.......


Success rate is 100 percent

left #
```

Table 4-18 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 subrate trunk interface control templates
- A list of commands in this chapter with beginning page number
- Descriptions of the trunk commands

Introduction

After *node* configuration, 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).
- Communication technology: Asynchronous Transfer Mode (ATM) or FastPackets.

Trunks require specific front and back card combinations in each node. The following table shows the communication technology for each node type, card combination, and line type.

Table 5-1 Trunk Card Sets and Line Types

Node Type	Front Card	Back Card	Line Types	Technology
IPX	NTC	BC-T1	T1, T1 Fractional	FastPacket
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
IPX	AIT	BC-T3, BC-E3	T3, E3	ATM
IGX	ALM/B	BC-UAI-1T3, BC-UAI-1E3	T3, E3	ATM
IGX	BTM	BC-T3, BC-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

Setting Up a Trunk

Prior to executing the commands in this section, node setup must be complete (see Chapter 4). 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 up the trunk. This command activates the card 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.

   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 **dsptrks**). 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 **dsptrkcnf** 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 called "Reconfiguring a trunk" for details.

3 Use the **addtrk** command 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 Chapter 4.)

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.

Reconfiguring a Trunk

This section describes how to change trunk parameters after the trunk has been added. After trunk is added, some parameters can be reconfigured without first deleting the trunk (**deltrk**). These parameters appear in the list that follows. All other changes to trunk parameters must follow trunk deletion. Instructions for changes these parameters follow the list.

The parameters that are changeable *without* first deleting the trunk are:

- PCC restrict
- Pass sync
- Loop clock
- Statistical reserve
- Bursty data peak speed
- Bursty data peak average frame
- Idle Code
- User traffic
- Connection channels (virtual trunks only)

To display the current trunk parameters, use the **dsptrkcnf** command. If all the parameters to be changed can be done **without** deleting the trunk, execute just the **cnftrk** command. Use **cnftrk** at *both* ends of the trunk.

To change parameters that require trunk deletion:

Step 1 Delete the trunk using **deltrk**. Execute **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. Do so 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.
- **prttrks**—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 IPXs and IGXs. 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 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.
- **prttrkict**—Prints the interface control template for a specifies line.

Summary of Commands

Table 5-2 shows the full name and starting page for the description of each trunk command.

Table 5-2 List of Trunk Commands

Mnemonic	Description	Page
addtrk	Add trunk	5-7
addtrkred	Add trunk redundancy	5-9
cnftrk	Configure trunk	5-11
cnftrkalm	Configure trunk alarm	5-18
cnftrkict	Configure trunk interface control template	5-20
cpytrkict	Copy trunk interface control template	5-22
deltrk	Delete trunk	5-24
deltrkred	Delete trunk redundancy	5-26
dntrk	Down trunk	5-28
dspnw	Display network	5-30
dsptrkbob	Display trunk breakout box	5-32
dsptrkcnf	Display trunk configuration	5-34
dsptrkict	Display trunk interface control template	5-37
dsptrkred	Display trunk redundancy	5-39
dsptrks	Display trunks	5-41
dsptrkstats	Display trunk statistics	5-43
prtnw	Print network	5-45
prttrkict	Print trunk interface control template	5-47
prttrks	Print trunks	5-48
uptrk	Up trunk	5-49

addtrk

Adds a trunk between two nodes. Execute **addtrk** at one of the nodes terminating the line. You must add a trunk to the network before the trunk can traffic. Before a trunk can be added to the network, the line must be activated, or "upped", at both ends of the connection using the **uptrk** command. The **addtrk** command only has to be entered at one end of the connection. A trunk must be free of major alarms before it can be added. If you use **addtrk** to join two previously separate networks, the local node verifies that all node names in both networks are unique before it adds the trunk.

You cannot execute **addtrk** 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.
- Two networks are to be joined, but the node names are not unique across both networks.

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 Cisco WAN Switching TAC 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    8.2    Mar. 3 1996 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 5-3 addtrk Parameters

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

Table 5-4 addtrk 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 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. This redundancy scheme requires two sets of ATM trunk cards and two T3 or E3 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.

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    8.2    Mar. 3 1996 15:15 MST

ATM Line           Backup ATM Line
4                        5









Last Command: addtrkred 4 5


Next Command:
```

Table 5-5 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.

cnftrk

Configures trunk parameters. A trunk has a default configuration after it is *upped* with **uptrk**. Beyond this default configuration, the **cnftrk** command lets you configure trunk parameters. You must execute **cnftrk** at both ends of 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.

Receive and Transmit Rates on Physical Trunks

The parameters RCV Trunk Rate and XMT Trunk Rate apply to standard, physical ATM trunks (but RCV Trunk Rate does not apply to BNI cards). These parameters let you configure lower rates than the maximum line rate for the trunk type. If you adjust a rate, do so at both ends of the trunk. For example, if RCV Trunk Rate on an IGX is 40,000 packets per second (pps), XMT Trunk Rate on the far end must be 20,000 cells per second (cps).

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, 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 XMT 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 XMT 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**.

Subrate and Fractional Trunks

For configuring an NTC or NTM trunk, the Subrate interface and Subrate data rate fields are configurable only if the back card is a BC-SR. The choices for interface type are V.11, X.21, V.35, and RS449. Set the data rate to match the subrate facility within the range 64 Kbps–1.920 Mbps.

The DS0 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 optional “y” are DS-0 numbers 0 to 23, and the optional “a” indicates *alternating*. The value of “y” must be greater than that 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. Normally, the parameters are set after the trunk has been upped but before it has been added to the network with the **addtrk** command.

The section “cnftrk–parameters” in this definition shows required trunk parameters. Virtual trunk parameters are in the section titled “cnftrk - optional parameters.” To help you select BPX trunk parameters, which are a subset of the total trunk parameters, a list of BPX trunk parameters follows:

Pass Sync	Statistical Reserve
Idle Code	Restrict CC Traffic
Link Type	HCS Masking
Cable Length	Valid Traffic Classes
Transmit Rate	Virtual Trunk VPI (virtual trunks only)
Payload Scramble	Virtual Trunk Type (virtual trunks only)
Loop Clock	Connection Channels (virtual trunks only)

You can reconfigure some parameters after adding a trunk. See the section “Reconfiguring a trunk.”

Full Name

Configure trunk

Syntax

cnftrk <*slot.port*>[.*vtrk*] <options for E1 | T1 | E3 | T3 | OC3 | 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    8.2 Dec. 5 1996  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


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    8.2       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                      recv 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:                      Frame Scramble:        --
         V,TS,NTS,FR,FST,CBR,VBR,ABR        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    8.2       July 30 1996 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                       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:     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:
```

Table 5-6 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 (informational display only)	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, fractional T1, fractional E1 subrate, ATM, NTC, NTM, OC3, STM1.	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	1000 pps
Tx TRK Rate	ATM	Maximum transmit rate in cells per second (cps) over a trunk. Note that defaults for virtual trunks are 1/32 of the default for T3/E3 and 1/11 of the default for OC3/STM1.	T3: 0–96000 cps E3: 0–80000 cps OC3: 0–353,208 cps T2: 0–14490 cps	96000 for T3 80000 for E3 353,208 for OC3 14490 for T2
Subrate interface	PKT	Subrate physical interface type	X.21 | V.35	X.21
Subrate data rate	PKT	Subrate data rate in Kbps	64–1920 Kbps	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. See the *Cisco WAN Switching System Overview* for a description.	UNI | NNI | STI .	STI
Gateway Type	ATM	Defines the type of addressing mode for this trunk. See *Cisco WAN Switching System Overview* for a description.	BPX-BPX (BAM) Cloud (CAM) Simple (SAM)	BAM
VPI Address	ATM	Virtual path address in ATM cell. Must be non-0 for a virtual trunk.	0–255	0
VCI Address	ATM	Virtual circuit address in ATM cell.	0–65,535	0
Idle code	ALL	HEX code that occupies the payload space of an ATM idle cell or an idle packet (idle packets carry 4 bytes).	0–FF (hex)	54 (E1) 7F (T1, ATM)
Restrict CC traffic (requires super user privilege)	ALL	Restrict node controller messages from a trunk. Restricting CC traffic can cause serious problems. Contact the WANBU TRT through Cisco Customer Engineering before you change it.	Y | N	No

Trunk Option	Type	Description	Possible Entries	Default
Link type	ALL	Terrestrial or Satellite link.Link Type applies to configuring a route so it can "avoid satellite."	T | S	T
Line framing	PKT	T1 line framing	D4 | ESF	D4
Line coding	PKT 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.	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. This applies to E3 and OC3 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
Gateway Efficiency	ATM	How many packets to stuff into an ATM cell. Does not apply to BNI.	1 | 2 | 3	2

Table 5-7 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

Virtual Trunk Parameter	Type	Description	Possible Entries	Default
Valid Traffic Classes	BNI	The valid types of traffic for a virtual trunk. The recommended traffic classes for each virtual trunk types: 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 are upped and added to the network, alarm reporting is enabled, but **cnftrkalm** allows disabling of alarms on upped trunks. This can be useful for trunks that are connected to a node but not yet in service or when a trunk has occasional bursts of errors but still functions. When 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    8.2    Mar. 3 1996 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 5-8 cnftrkalm Parameters

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

Table 5-9 cnftrkalm Optional Parameters

Parameter	Description
vtrk	Specifies the virtual trunk number.

cnftrkict

Configures the output lines of an interface control template for a subrate trunk. The following list shows the configurable signals:

Table 5-10 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

dsptrkict, prttrkict

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 subrate trunk 9.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 3 1996 15:15 MST


Packet Line:9
Interface:X.21DTE

Interface Control Template for Trunk Line

Lead Output Value LeadO Output Value
C /DTR ON









Last Command: cnftrkict 9 c on


Next Command:
```

Table 5-11 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.21or V.35).
source	Specifies how the specified output lead is to be configured. The options are as follows: • 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 depending on 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    8.2    Mar. 3 1996 15:15 MST


Packet Line:9
Interface:X.21DTE

Interface Control Template for Trunk Line

LeadOutput ValueLeadOutput Value
C/DTR ON









Last Command: cpytrkict 9 11


Enter destination line number:
```

Table 5-12 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 will be 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    8.2    Mar. 15 1996 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 5-13 deltrk Parameters

Parameter	Description
slot.port	Specifies the physical trunk number.

Table 5-14 deltrk Optional Parameters

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

deltrkred

Removes redundancy from an ALM/B, BTM, or AIT trunk. After you execute **deltrkrd**, 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    8.2    Mar. 15 1996 15:15 MST

ATM Line          Backup ATM Line

7                       8









Last Command: deltrkred 5

Next Command:
```

Table 5-15 deltrkred Parameters

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

dntrk

Downs a trunk, after which the line no longer has framing nor statistics gathering. Before it can be downed with **dntrk**, a trunk must be removed from the network with **deltrk** (or **delshelf** in a tiered nets).

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    8.2    Mar. 3 1996 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 5-16 dntrk Parameters

Parameter	Description
slot.port	Specifies the physical trunk.

Table 5-17 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, prtnw

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     8.2 Nov. 13 1996 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 5-18 dspnw Optional l Parameters

Parameter	Description
+b	Display only the lines that support bursty data.
-b	Display only the lines that do no support bursty data.
+z	Display only the lines that use ZCS encoding.
-z	Display only the lines that do not use ZCS encoding.

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, dsptrkict

Attributes

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

Example 1

dsptrkbob 9

Description

Display the breakout for subrate trunk 9.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    April 15 1996 15:15 MST


Packet Line:9
Interfaces:    X.21    DTE

Inputs from Line Equipment              Outputs to 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




Last Command: dsptrkbob 9


Hit DEL key to quit:
```

Table 5-19 dsptrkbob Parameters

Parameter	Description
trunk	Specifies the subrate trunk.

Table 5-20 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.

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

Description

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

System Response

```
sw91           TN    SuperUser       IPX 8     8.2       May  22 1996 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


Last Command: dsptrkcnf 6


Next Command:
```

Example 2

dsptrkcnf 11

Description

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

System Response

```
IGX16          TN    SuperUser       IGX 16    8.2 Jan. 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


Last Command: dsptrkcnf 11


Next Command:
```

Example 3

dsptrkcnf 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    8.2       June 22 1996 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: dsptrkcnf 13.3.1


Next Command:
```

Table 5-21 dsptrkcnf Parameters

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

Table 5-22 dsptrkcnf 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.)

dsptrkict

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

dsptrkict <line>

Related Commands

cnftrkict, prttrkict

Attributes

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

Example 1

dsptrkict 9

Description

Display subrate for the trunk 9 interface control template.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2  Mar. 15 1996 15:15 MST


Packet Line:9
Interface:X.21DTE

Interface Control Template for Trunk Line

LeadOutput ValueLeadOutput Value
C/DTR ON









Last Command: dsptrkict 9


Next Command:
```

dsptrkred

Displays the backup and primary cards for a trunk.

Full Name

Display ATM trunk redundancy

Syntax

dsptrkred [trunk]

Related Commands

addtrkred, deltrkred

Attributes

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

Example 1

dsptrkred

Description

Display all ATM trunks with redundancy.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 15:15 MST

ATM Line       Backup ATM Line
4                     5
7                     8









Last Command: dsptrkred


Next Command:
```

Table 5-23 dsptrkred 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, dsptrks, 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    8.2    April 24 1996 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:
```

dsptrkstats

Displays the trunk port status, ATM cell loss counts, cell payload errors, and cell header errors for the specified trunk. Table 5-24 lists the other statistics. If you include the optional *clear* parameter, **dsptrkstats** execution clears the statistics.

Table 5-24 Additional Statistics in the dsptrkstats 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

dsptrkstats <slot.port> [clear]

Related Commands

cnftrkstats, dsptrkerrs

Attributes

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

Example 1

dsptrkstats 1.1

Description

Display cell statistics for ATM trunk 1.1.

System Response

```
sw53           TN    SuperUser       BPX 15    8.2       April 24 1996 23:07 GMT

Trunk  1.1      Status: Clear - OK                    Cleared: 04/24/96 17:31:16
Type                                  Count
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:
```

Table 5-25 dsptrkstats Parameters

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

Table 5-26 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. Command uses the same syntax, and prints the same information as is displayed using 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 5-27 prtnw Parameters

Parameter	Description
+b	Display only the lines that support bursty data.
-b	Display only the lines that do no support bursty data.
+z	Display only the lines that use ZCS encoding.
-z	Display only the lines that do not use ZCS encoding.

prttrkict

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

prttrkict <*line*>

Related Commands

dsptrkict

Attributes

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

Example 1

prttrkict

Description

Print network topology.

System Response

(No screen display, just a printout.)

Table 5-28 prttrkict Parameters

Parameter	Description
line	Specifies the trunk interface control template.

prttrks

Prints the trunk configuration for the node. This command uses the same syntax and prints the same information as the **dsptrks** 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

prttrks

Related Commands

dsptrks

Attributes

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

Example 1

prttrks

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. With the trunk in this state, the node can monitor it for reliability. Once a trunk has shown reliability and is ready to go into service, use **addtrk** to 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—a virtual trunk, in this case, which the third digit indicates.

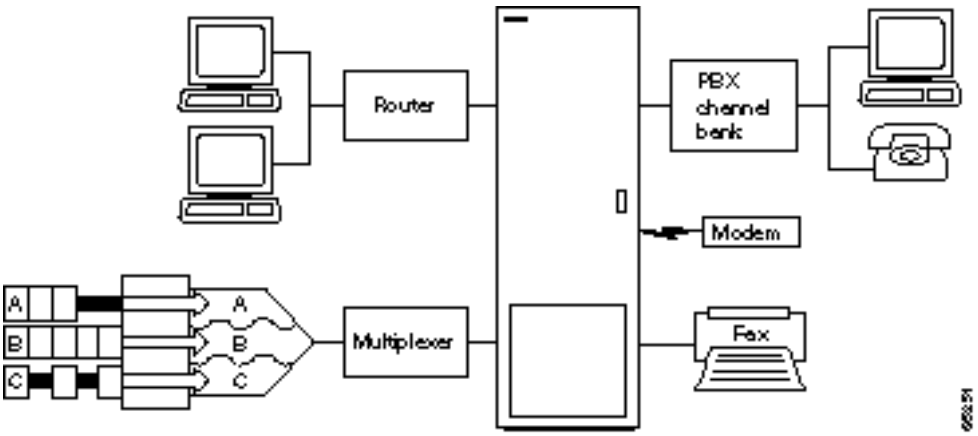
Table 5-29 uptrk Parameters

Parameter	Description
slot.port	Specifies the slot and port of the trunk to activate. If the card has only one port, the *port* parameter is not necessary. An NTM, for example, has one port.

Table 5-30 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). 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 equipment in the illustration above is attached to the 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 that are correct for the card type it detects.

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

Table 6-1 Input Line Formats

Type	Country	Electrical Signal Format	Ones Density Requirement	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 6-2 Line Card Combinations

Service	Node Type	Front Card	Back Card
ATM	IGX	ALM/A	BC-UAI-1T3 BC-UAI-1E3
Frame Relay	IGX	UFM-4C, UFM-8C	UFI-8T1-DB15, UFI-8E1-DB15, UFI-8E1-BNC
Frame Relay	IPX/IGX	FRP/FRM	FRI/V.35, FRI/X.21
Frame Relay	IPX/IGX	FRP-6, FRP-31/FRM-6, FRM-31	FRI-T1, FRI-E1
Frame Relay	IPX/IGX	FRP-2, FRM-2	FRI-2-X.21
Frame Relay	IGX	UFM-C or UFM-U	UFI-8T1-DB15 UFI-8E1-DB15 or UFI-8E1-BNC
High Speed Data	IPX/IGX	SDP/HDM	SDI/RS-232 SDI/V.35 SDI/RS-422
Low Speed Data	IPX/IGX	LDP	LDI4/RS-232 LDI4/DDS LDI8/RS-232
Voice	IGX	UVM	BC-UVI-2T1EC BC-UVI-2E1EC
Voice	IPX/IGX	CDP/CVM	BC-T1 BC-E1 BC-J1

Setting Up a Circuit Line

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

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

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

The **upcln** and **cnfcln** commands establish the general parameters for the circuit line. They do not establish specific frame relay, data, or voice parameters. Refer to the appropriate chapter for details of setting up a particular service on a circuit line/ line. For example, the Data Connections chapter describes specific commands for data connections, and the Frame Relay Connections chapter 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 **dncln**.
- **dsplncnf**—displays the configuration of a specified circuit line.
- **dspln**s—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 6-1, Figure 6-2, Figure 6-3, Figure 6-4, and Figure 6-5 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 and unchannelized streams.

Figure 6-1 Setting Up Voice Lines

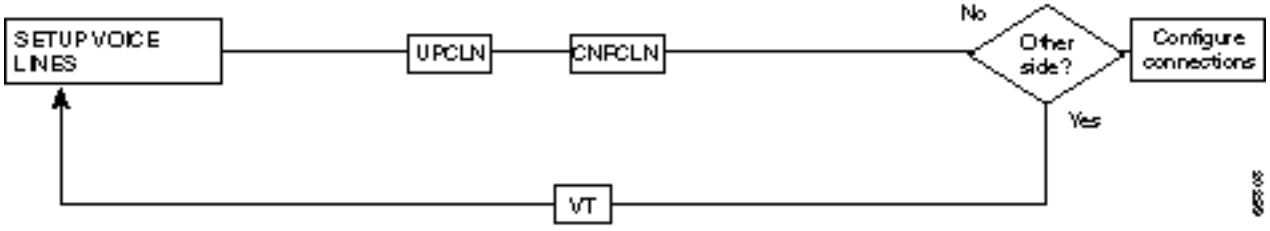


Figure 6-2 Setting Up Data Lines

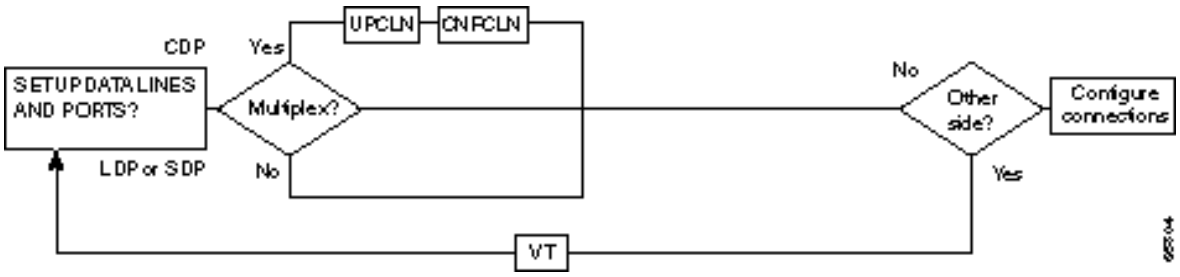


Figure 6-3 Setting Up Frame Relay Lines

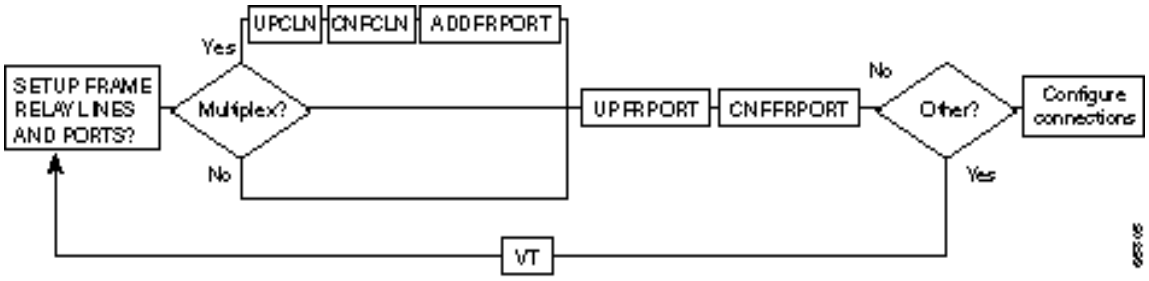


Figure 6-4 Setting Up ATM Lines

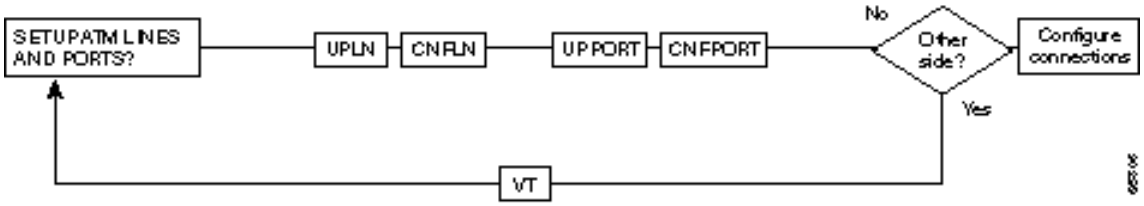
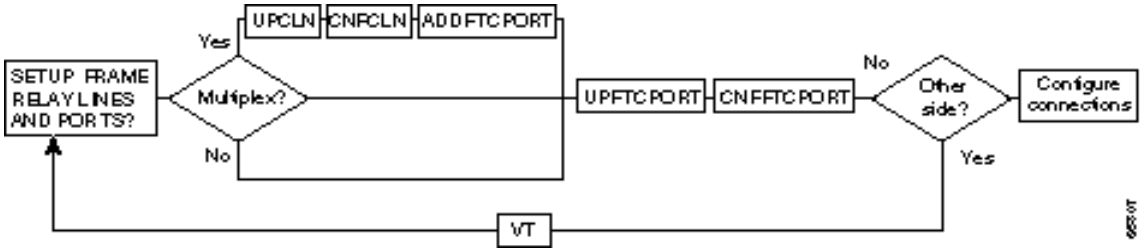


Figure 6-5 Setting Up FastPAD Lines



List of Commands

Table 6-3 shows the full command name and starting page for each line command description.

Table 6-3 Line Commands

Mnemonic	Description	Page
cnfln	Configure line (same as cnfcln)	6-5
dnln	Down line (same as dncln)	6-11
dsplncnf	Display line configuration (same as dspcln)	6-12
dsplns	Display lines (same as dspclns)	6-16
prtlns	Print circuit lines (same as prtclns)	6-18
upln	Up circuit line (same as upcln)	6-19

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 6-2 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 6-4 describes the parameters for voice, data, and frame relay parameters. Table 6-5 describes the parameters for the ATM Line Module (ALM/A). Table 6-6 describes the parameters for the ASI line card (BPX 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

Attributes

Privilege	1
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    8.2    Mar. 23 1996 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    8.2    Mar. 23 1996 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:        ABAH
     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    8.2    Mar. 23 1996 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    8.2 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:
```

Table 6-4 cnfcln Voice, Frame Relay, or Data Parameters

Parameter	Description			Default
slot or slot.line	Specifies the line. If the back card has one circuit 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 UFMs)
line coding	Configures T1 and E1 coding:			
	T1: ZCS			ZCS
	B8ZS			
	AMI			
	E1:HDB3			HDB3
	ZCS			
line CRC on	Enables CRC-4 detection for E1 lines. Use either Y or N			N
E1 recv impedance	Parameter	Impedance	Description	1
	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 signalling (CCS) or ABCD signalling bits with channel associated signalling (CAS)			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.			AB
encoding	A-law µ–law			A-law
cable type/length	Parameter	Voice Circuits	Frame Relay Circuits	4
	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 6-5 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 6-6 cnfln ATM (ASI) Parameters

Parameter	Description			
line number	Specifies the ASI line 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
	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

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.

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

Full Name

Down line

Syntax

dnln <line number>

Related Commands

upcln, dspclns

Attributes

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

Example

dnln 12

Description

Deactivate line 12.

Table 6-7 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.

dsplncnf

Displays the configuration of a line. Table 6-8 shows all possible parameters in the display. The fields that actually contain data depend on the type of line.

Table 6-8 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	Idnetifies the type of T1 line framing used by the circuit line.	DS4 ESF
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 signalling	Identifies the signalling type used for E1.	CCS or ABCD with CAS
encoding	Specifies the voice encoding scheme	µlaw Alaw
T1 signalling	Identifies the signalling 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 0–133 133–266
Cnfg	Applies to the UVM: cnfg shows the mode of an individual UVM port. The *slot.line* identifies the line.	External, Passing, Blocked, or Inserting See the UVM documentation in the *Cisco IGX 8400 Series Reference* 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 or 80000 cps for E3.
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 or 150–80000 cps for E3.
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

dsplcnf <line number>

Related Commands

cnfln (obsolete: cnfcln)

Attributes

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

Example

dsplncnf 7.1

Description

Displays configuration for line 1 of the UVM in slot 7. Note that the “cnfg” field shows that the port is configured as “external,” so this UVM is terminating all DS0s on the line.

System Response

```
sw109          VT    SuperUser       IGX 16    8.2 Mar. 20 1997 18:36 PST

LN   7.1 Config      T1/24                  UVM slot: 7
Loop clock:          No

Line framing:        D4                          cnfg:            External
     coding:         ZCS                             slot.line:  --
     CRC:            --
     recv impedance: --
  E1/J1 signalling:  --
     encoding:       --
     T1 signalling:  AB
     cable type:     ABAM
     length:         0-133 ft.
     56KBS Bit Pos:  msb
     pct fast modem: 20

Last Command: dsplncnf 7.1

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, so fewer parameters appear.

System Response

```
sw142          TN    SuperUser       IGX 16    8.2 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 is slot 12 is an ASI in a BPX node.

System Response

```
ca20           LAN   SuperUser       BPX 15    8.2   Mar. 23 1996 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:          --                      cable type:
     T1 signalling:     --                      length:           0-450 ft.
                                              HCS Masking:           Yes
                                              Payload Scramble:      No
     56KBS Bit Pos:     --
     pct fast modem:    --


Last Command: dsplncnf 12.1


Next Command:
```

Table 6-9 dsplncnf Parameters

Parameter	Description
line number	Identifies the line in the format *slot* or *slot.line*. If the back card has one line connector and cable, enter the slot number. If the card has more than one physical line, 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, or E1 and shows the number of configured channels. *Line status* categories include:

- Clear—Line OK
- Loss of Signal
- Out of Frame (for T1)
- Major—Local CGA (RED)
- Minor—Bad clock source
- Alarm Information Signal
- Remote Out of Frame (for T1)
- Remote Out of Packet Frame
- Minor—Remote CGA (YEL)
- Loss of Multiframe (for E1)

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
Lock	No

Example

dsplns

Description

Display circuit lines on the node.

System Response

```
sw109          VT    SuperUser       IGX 16    8.2 Mar. 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:
```

prtclns

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 **dspclns** command for syntax and output information.

Full Name

print line configuration

Syntax

prtlns

Related Commands

dspclns

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. The **upln** command makes the line available for configuring and causes statistics gathering to begin. 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 6-2 for information on card combinations.

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.

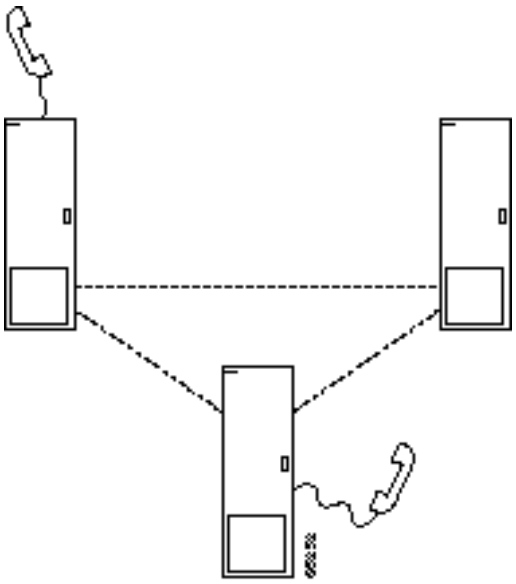
System Response

```
ca19           VT    SuperUser       BPX 15    8.2    Mar. 23 1996 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:
```

Table 6-10 upln Parameters

Parameter	Description
line number	Identifies the line number in the form *slot* for a single-line card or *slot.port* for a card with more than one line.

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 set up the voice connection, configure voice redundancy, use VAD, and configure voice channel utilization.

Voice connections exist as ports on circuit lines that are supported by either a CDP in an IPX or a CVM or 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 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. (The **upln** and **upcln** commands have the same purpose.)

cnfcassw If the UVM must convert CAS or DTMF to CCS signaling messages for processing by a Voice Network Switch, use **cnfcassw** to configure the UVM for CAS switching. The UVM must be a Model C or higher.

cnflnpass For a UVM intended to carry voice traffic with Low Delay Code-Excited Linear Predictive Coding (LDCELP), **cnflnpass** configures the UVM lines for the pass-through feature. Refer to the *Cisco IGX 8400 Series Reference* for a description of pass-through. Before you can execute **cnflnpass**, you must up (**upln**) and configure (**cnfln**) the lines.

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. Options are inband (default), 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.

cnfcondsc Configures a connection descriptor for the channel.

cnfrcvsig Configures receive signalling for the channel.

cnfxmtsig Configures transmit signalling for the channel.

cnfvchtp Configures a voice interface type for the channel.

cnfchutl Configures the channel utilization (see the chapter titled "Optimizing Traffic Routing and Bandwidth").

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 then connecting them to the CPE through a Y-cable. Configure redundancy by using **addyred**.

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 7-1 Voice Connection Commands

Mnemonic	Description	Page
addcon	Add connection	7-4
cnfchadv	Configure channel adaptive voice	7-8
cnfchdl	Configure channel dial type	7-10
cnfchec	Configure channel echo canceller	7-13
cnfchfax	Configure fax modem detection for channels (UVM)	7-16
cnfchgn	Configure channel gain insertion	7-18
cnfcond	Configure conditioning template	7-20
cnfcondsc	Configure connection description	7-22
cnflnpass	Configure line pass	7-24
cnfrcvsig	Configure receive signalling	7-26
cnfuvmchparm	Configure UVM channel parameters	7-26
cnfvchtp	Configure voice channel interface type	7-30
cnfxmtsig	Configure transmit signalling	7-34
delcon	Delete connection	7-36
dspchcnf	Display channel configuration	7-38
dspchdlcnf	Display channel dial type configuration	7-40
dspchec	Display channel echo canceller	7-42
dspcon	Display connection	7-44
dspcond	Display conditioning template	7-46
dspcons	Display connections	7-48
dspconst	Display connection state	7-51
dspsigqual	Display signal qualifiers	7-53
dspsvcst	Display voice SVC statistics	7-55
prtchcnf	Print channel configuration	7-57
prtchdlcnf	Printdial type configuration	7-58
prtcons	Print connections	7-59

addcon

Establishes the channel connections between nodes in the network. You can add 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 Low Delay Code-Excited Linear Predictive Coding (LDCELP compression), you must have a second, connected UVM and configure the pair of UVMs for pass-through operation. If you attempt to add more than 16 LDCELP channels, the system reports the excess connections as failed upon conclusion of the **addcon** command, and **dspcon** for any excess connection shows a status of "ConnRJ" (connection rejected). Refer to the **cnflnpass** description in this chapter and the UVM description in the *Cisco IGX 8400 Series Reference* for a description of pass-through operation.

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.

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 7-2 describes what you enter for the *type* parameter for each rate and compression variable.

Table 7-2 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 7-3 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	l16V	l16	For non-ZCS only.

Table 7-4 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 signalling.
t	A t-connection carries 64 Kbps clear channel data traffic.
v	A v-connection is the same as “p” (above) but with voice activity detection (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.
l16	LDCELP compression of voice to 16 Kbps.
l16v	LDCELP compression of voice to 16 Kbps with VAD.

The difference between a PCM (p) connection and a transparent (t) connection is that the D4 frame signalling bits are identified and processed as signalling information with PCM connections. PCM connections permit gain adjustment to be applied to the connection. Transparent connections treat all bits, including signalling 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, dspcons, upcon, 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    8.2    Mar. 16 1996 09:37 PST

 Local      Remote      Remote                                      Route
 Channel    NodeName    Channel    State  Type    Compression  Code Avoid COS O
7.2         beta       8.2        Ok    v          VAD         2     L     2




Last Command: addcon 7.2 beta 8.2 v


Next Command:
```

Table 7-5 addcon Parameters

Parameter	Description
local channel	Specifies the local 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 *slot.chan*[*–chan*]. For a UVM, the format for channel specification is *slot.line.chan*[*–chan*]. Note that if you have specified CAS switching with the **cnfcassw** command, the signaling channels are 25 on a T1 line and 16 on an E1 line.
node	Specifies the name of the node at the other end of the connection. For a DACS-type connection (where channels on a node are connected to channels on the same node), use the local node name.
remote channel	Specifies the remote channel or set of channels. Brackets indicate a range of channels. For a CDP or CVM, the format for channel specification is *slot.chan*[*–chan*]. For UVM, the format for channel specification is *slot.line.chan*[*–chan*]. Note also that if you have specified CAS switching with the **cnfcassw** command, the signaling channels are 25 on a T1 line and 16 on an E1 line. Access devices such as the Cisco 3800 use the following format for the remote channel specification: <*slot.port*> <*access_device_connection_ID*> where *slot* is the slot number of the FTC or FTM card, *port* is the port number, and *access_device_connection_ID* is in the range 1–252.

Parameter	Description
type	Specifies the voice connection type. Refer to Table 7-2 or Table 7-3 for voice connection types and compression. For connections to an access device such as the Cisco 3800, *type* can be one of the following compression algorithms: a24, a32, or l16 (16 Kbps LDCELP).

Table 7-6 addcon Optional Parameters

Parameter	Description
avoid	Specifies the type of trunk for the connection to avoid. The default is no avoidance. The choices 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.

cnfchadv

Enables the Adaptive Voice feature for individual channels. The Adaptive Voice feature must also exist at each node that terminates the connection. The channel-specific **cnfchadv** has no effect at nodes that do not have Adaptive Voice.

If the Adaptive Voice 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 Adaptive Voice, both ends must have Adaptive Voice 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    8.2    Mar. 16 1996 09:43 PST

           %    Adaptive  Gain (dB)   Dial                          OnHk      Cond
Channels  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 7-7 cnfchadv Parameters

Parameter	Description
channel	Specifies the channel or range of channels over which you specify Adaptive Voice.
e	Enables Adaptive Voice (default).
d	Disables Adaptive Voice.

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 signalling pulses are not distorted in time by transmission through the network.

- Dial type determines the signalling 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 signalling 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 signalling bit status goes in a packet to the far end of the connection.

If you select pulse, the transmitting node waits (normally 72 msec) after an A or B bit transition for another transition to arrive. If a transition arrives, the new transition goes into the same signalling packet that is sent to the far end of the connection. This step increases the delay of the signalling transition across the network but decreases the amount of trunk bandwidth used for signalling.

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 signalling, a greater than necessary delay across the network results. If a connection-designated inband is used for pulse signalling, the relative timing of signalling 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, dspchdlcnf

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    8.2   Mar. 16 1996 09:46 PST

           %    Adaptive  Gain (dB)   Dial                          OnHk     Cond
Channels  Util  Voice     In  Out     Type   Interface Type    A  B  C  D  Crit.
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 7-8 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 7-9 cnfchdl Optional Parameters

Parameter	Description
signalling delay	Specifies the signalling delay for the user-configured dial type. The range is 12–96 milliseconds. Your entry is rounded to the closest multiple of 1.5 msecs.
minimum wink	Specifies the minimum wink to assign to the user-configured dial type. The range is 3–765 milliseconds. Your entry is rounded down to the nearest multiple of 3 msecs. This parameter does is 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 milliseconds. Your entry is rounded down to the nearest multiple of 3 msecs. This parameter does is 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 milliseconds. Your entry is rounded to the closest multiple of 1.5 msecs.

cnfchec

Configures the echo canceller and other channel parameters associated with a voice channel. The echo canceller is the Integrated Echo Canceller (IEC) on the front card. CAS and data channels are not configured. The CDP/CVM and UVM have slightly different parameters. Unavailable parameters appear on the screen as dashed line, and no prompts for these unavailable prompts 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    SuperUser       IPX 16    8.2    July 27 1996 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    SuperUser       IGX 16    8.2 Apr. 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 7-10 cnfchec Parameters

Parameter	Description
channel	Specifies the channel or range of channels. For a CDP or CVM, “channel” has the format *slot.channel(s)*. For a UVM, “channel” has the format *slot.line.channels(s)*.
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 FAX detection.

Full Name

Configure FAX modem detection for channels

Syntax

cnfchfax <slot.line> <channel(s)> <e/d>

Related Commands

Attributes

Privilege	1–2
Jobs	Yes
Log	Yes
Node	IPX, 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    SuperUser       IGX 16    8.2 Mar. 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 7-11 cnfchgn 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 mode 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 CDP or CVM and is therefore applied before the signal is packetized by the card. The output gain is inserted at the transmit side of a CDP or CVM and is applied after the signal has been depacketized by the card. Gain is ignored for channels used in data connections.

Full Name

Configure gain insertion for channels

Syntax

cnfchgn <channel(s)> <input_gain> <output_gain>

Related Commands

dspchcnf

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    8.2    Mar. 16 1996 09:52 PST

           %    Adaptive  Gain (dB)   Dial                          OnHk      Cond
Channels  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 7-12 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 signalling bits while the channel is in the failed state. Its purpose is to prevent the signalling 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 'Signalling Pattern' field displays the pattern transmitted in the channel's A, B, C, and D signalling bit positions. Each of the A, B, C, and D signalling 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 msec.

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 lm 01010100 0(40)/1 1 1 1

Description

Configure the conditioning template.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 16 1996 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 7-13 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 B bit C bit D bit	Specifies the signalling sequence to be transmitted for these bits in the event of channel failure. Each of these four parameters may be set independently. 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 state is to be held on the channel. The duration number is expressed in 50 msec intervals. For example, if <B> is set to 1(40); upon a channel failure, the B bit is held to the 1 state for a period of 2 seconds (40 x 50 msec = 2 seconds). If the duration value is omitted, the state is held permanently. So <C> set to 0 would cause the C bit to be held permanently to 0 during a failed channel condition. A sequence of states can be specified by entering several states separated by slash symbols. A maximum of 5 states in sequence can be specified. For example, <A> set to 1(40)/0(20)/1 would cause, upon a failure of the c

cnfcondsc

Assigns a user-specified, reference description to a connection. The connection descriptor is independently configurable at each end of a connection**.** To remove a descriptor, enter this command and specify a null descriptor. A descriptor cannot be deleted in a job, just reconfigured. The **dspcon** and **dspcons +d** commands display any existing connection descriptors.

Full Name

Configure connection description

Syntax

cnfcondsc <channel> <descriptor>

Related Commands

dspcon, dspcons

Attributes

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

Example 1

cnfcondsc 5.1 gracie’s_phone

Description

Assign the descriptive name “gracie’s_phone” to channel 5.1. To assign this descriptor at the other end of the connection, **vt** to the other end of the connection, enter **cnfcondsc**, and specify the name “gracie's_phone.“

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2     Mar. 15 1996 15:40 PST

Conn:  5.1        beta        25.1        256 7/8    Desc: gracie's_FAX


Owner: REMOTE  Restriction: NONE  COS: 0                    Status: OK
Compression: NONE

Path:     alpha   10-- 7beta
Pref:     Not Configured


alpha 5.1                                          beta 25.1
SDP:   OK                                          SDP:   OK
SDI:   OK                                          SDI:   OK
Clock: OK                                          Clock: OK

Last Command: cnfcondsc 5.1 gracie's_phone


Next Command:
```

Table 7-14 cnfcondsc Parameters

Parameter	Description
channel	Specifies the local voice, data, frame relay, or ATM channel to describe.
descriptor	Specifies a string of up to 20 characters. The descriptor cannot begin with a number, and no spaces are allowed.

cnflnpass

Configures a pair of ports so that unprocessed channels go from a *primary* UVM to a *secondary* UVM. The primary application of the **cnflnpass** command is to channels that use LDCELP, although any type of connection except t-type connections are valid for pass-through. For a description of *pass-through*, refer to the UVM description in the *Cisco IGX 8400 Series Reference*.

To return ports to the default, non-passing configuration, execute the command 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    SuperUser       IGX 16    8.2 Apr. 26 1997 00:18 GMT

LN  13.1 Config      E1/30                  UVM slot: 13
Loop clock:          No

Line framing:        On                          cnfg:            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 7-15 cnflnpass Parameters

Parameter	Description
primary line	Specifies the channels that the primary card supports. The format is *slot.port*.
secondary line	Specifies the channels that the secondary card supports. The format is *slot.port.*

cnfrcvsig

Configures the receive signalling bits for a CDP or CVM voice channel. Channel signalling bit options are T (transparent), 0, 1, or I (invert). If signalling is set to "not used" (-) by **cnfchtp**, the following condition is maintained: A=1, B=1, C=0, D=1.

Full Name

Configure receive signalling

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 signalling 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    8.2    Mar. 23 1996 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 7-16 cnfrcvsig Parameters

Parameter	Description
channel	Specifies the channel or range of channels to receive signalling.

Table 7-17 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.

cnfuvmchparm

Configures default parameters for a channel or range of channels on a UVM. The parameters are:

- Voice codec unit (VCU) level
- PCM interface unit (PIU) level
- VAD threshold
- Modem threshold

See Table 7-18 for an explanation of the preceding UVM channel parameters.

Full Name

Configure UVM channel parameters

Syntax

cnfuvmchparm <channel(s)> <value>

Related Commands

Attributes

Privilege	0
Jobs	Yes
Log	Yes
Node	IGX
Lock	Yes

Example 1

cnfuvmchparm 7.1.1

Description

Configure the parameters for channels 1–23 on port 1 of the UVM in slot 7.

System Response

```
sw109          VT    SuperUser       IGX 16    8.2 Mar. 26 1997 17:25 PST

From        Parameter:
             VCU   PIU  VAD   mdm
7.1.1        lvl   lvl  thld  thld   5     6     7     8     9     10    11
7.1.1-23      6     6      40  40     0     0     0     0     0     0     0
7.2.1-23      6     6      40  40     0     0     0     0     0     0     0
```

```
This Command: cnfuvmchparm 7.1.

Enter VCU Noise Level/-10dB [0-15]:
```

Table 7-18 cnfuvmchparm Parameters

Parameter	Description
channel	Specifies the channel or range of channels.
value	"Value" consists of the following parameters: VCU is the Voice codec unit. The value for this parameter is a noise level placed in a voice packet that is added in case a voice packet is dropped. The value you can enter is a multiplier for the base noise level of -10 dB. The range is 1 - 15 (multiplied by -10 dB). For example, if you enter 6, the level of noise placed in a replacement packet is -60 dB. PIU is the PCM interface unit. This feature performs a resampling and injects noise in case of lost packets. The range is 1 - 15 (multiplied by -10 dB). For example, if you enter 6, the level of noise placed in a replacement packet is -60 dB. VAD is the Voice Activity Detection threshold. If the deciBel level falls below the specified limit, no packets are transmitted. The range is 0 - 65535 and is a multiplier of -1 dB, but typical values are around 30–40. Modem threshold is a threshold for modem tone detection. Below this threshold, the tone is ignored (or "not detected"). The range is 0–255 and is a multiplier of -1 dB, but typical values are around 30–40. All the other values appear as numbered columns. These are placeholders reserved for future development.

cnfvchtp

Configures an interface signalling type for a voice channel. Most standard signalling 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, dspconst

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    SuperUser       IGX 16    8.2 Mar. 20 1997 18:54 PST

CDP Models All                                  None              All
UVM Models All                                  None              All
           Sample Delay  Bkgnd                 Echo Suppression   V.25    Xmit
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: cnfvchparm 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 7-19 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 *slot.channel*[-*channel*]. For a UVM, the format for channel is *slot.line.channel*[-*channel*].

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>interface type</td><td>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.
<table>
<tr><th>Interface Number</th><th>Interface Type</th><th>Onhook</th><th>Conditioning</th></tr>
<tr><td>1</td><td>User Config</td><td></td><td></td></tr>
<tr><td>2</td><td>Unconfig</td><td>? ? - -</td><td>a</td></tr>
<tr><td>3</td><td>No Sig</td><td>? ? ? ?</td><td>a</td></tr>
<tr><td>4</td><td>Force Sig</td><td>? ? - -</td><td>a</td></tr>
<tr><td>5</td><td>2W E&M</td><td>0 X - -</td><td>a</td></tr>
<tr><td>6</td><td>4W E&M</td><td>0 X - -</td><td>a</td></tr>
<tr><td>7</td><td>FXO</td><td>11 - -</td><td>b</td></tr>
<tr><td>8</td><td>FXS G/S</td><td>01 - -</td><td>c</td></tr>
<tr><td>9</td><td>FXS L/S</td><td>0 X - -</td><td>d</td></tr>
<tr><td>10</td><td>DPO</td><td>0 X - -</td><td>a</td></tr>
<tr><td>11</td><td>DPT</td><td>0 X - -</td><td>a</td></tr>
<tr><td>12</td><td>RPO</td><td>0 X - -</td><td>a</td></tr>
<tr><td>13</td><td>RPT</td><td>0 X - -</td><td>a</td></tr>
<tr><td>14</td><td>SDPO</td><td>0 X - -</td><td>a</td></tr>
<tr><td>15</td><td>DX</td><td>0 X - -</td><td>a</td></tr>
<tr><td>16</td><td>ETO</td><td>? ? - -</td><td>e</td></tr>
<tr><td>17</td><td>PLAR</td><td>? ? - -</td><td>d</td></tr>
<tr><td>18</td><td>PLR</td><td>0 X - -</td><td>a</td></tr>
<tr><td>19</td><td>RD</td><td>? ? - -</td><td>a</td></tr>
<tr><td>20</td><td>R1 (SOCOTEL)</td><td>0 - - -</td><td>e</td></tr>
<tr><td>21</td><td>SSDC5A</td><td>1 1 0 1</td><td>f</td></tr>
<tr><td>22</td><td>R2 (backward)</td><td>1 1 - -</td><td>e</td></tr>
<tr><td>23</td><td>R2 (forward)</td><td>1 0 - -</td><td>d</td></tr>
</table>
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 be offhook</td></tr>
<tr><td>onhook A</td><td>A-bit value for the onhook state of a channel or set of channels.</td></tr>
<tr><td>onhook B</td><td>B-bit value for the on-hook state of a channel or set of channels.</td></tr>
<tr><td>onhook C</td><td>C-bit value for the on-hook state of a channel or set of channels.</td></tr>
</table>

Parameter	Description
onhook D	D-bit value for the on-hook state of a channel or set of channels. Possible values are: 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 **dspcond** 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.

cnfxmtsig

Allows the node to pass A, B, C, and D channel signalling bits through unchanged, or to invert, or hold them at a given value for a CDP or CVM line. It affects signalling bits in the transmit direction (to the PBX or channel bank) in an E1 system. The command configures the transmit signalling. Channel signalling bit options are T (transparent), 0, 1, or I (invert). If signalling is set to "not used" (-) by **cnfchtp**, the following is maintained: A=1, B=1, C=0, D=1.

Full Name

Configure transmit signalling

Syntax

cnfxmtsig <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

cnfxmtsig 8.1 a/1 b/0 c/1 d/t

Description

Configure the transmit signalling 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    8.2    Mar. 23 1996 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: cnfxmtsig 8.1 A/1 B/0 C/1 D/t


Next Command:
```

Table 7-20 cnfxmtsig Parameters

Parameter	Description
channel	Specifies the channel or range of channels to receive signalling.

Table 7-21 cnfxmtsig 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    8.2    Mar. 16 1996 09:35 PST

 Local      Remote      Remote                                      Route
 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




Last Command: delcon 14.1


Next Command:
```

Table 7-22 delcon Parameters

Parameter	Description
channel(s)	Specifies a channel or range of channels to delete. The format for channel on a CDP or CVM is *slot.channel* The format for channel on a UVM is *slot.line.channel.* For a range of channels, separate the first and last channel with a dash (-).

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, cnffrcon

Attributes

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

Example 1

dpchcnf 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    SuperUser       IGX 16    8.2 Mar. 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 7-23 dspchchf Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. The format for a CDP or CVM is *slot.channel.* The format for a UVM is *slot.line.channel.*

dspchdlcnf

Displays dial type configurations for all channels on a circuit line as follows:

Table 7-24 Information in dspchdlcnf Display

Channel Type	Dial Type	Description
All	Dial Type	Inband, pulse, or user-configured.
User-configured	signalling delay	The signalling delay on a channel. The range is 12–96 milliseconds.
	minimum wink	The minimum wink on the channel. The range is 3–765 millisecs. (Minimum wink does not apply to a CDP or CVM channel.)
	interdigit time	The interdigit times on a channel. The range is 3–765 millisecs. (Interdigit time does not apply to a CDP or CVM channel.)
	playout delay	The playout delay on a channel. The range is 12–96 millisecs.

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

dpchdlcnf 14.1

Description

Display the dial type configuration for all channels beginning with 14.1.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 16 1996 09:45 PST


Channels  Type   Sig Delay   Min Wink  IntDigit Time  Playout Delay
14.1-24   Inband      12        141           300           -









Last Command: dspchdlcnf 14.1


Next Command:
```

Table 7-25 dspchdlcnf Parameters

Parameter	Description
start channel	Specifies the channel at which the display begins. For a CDP or CVM, the format is *slot.channel*. For a UVM, the format is *slot.line.channel*.

dspchec

Displays the Integrated Echo Canceller 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 7-26 lists the displayed parameters and possible values.

Table 7-26 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

dpchec 7.1

Description

Display the echo canceller configuration for channel 7.1.

System Response

```
pubsipx1       TN    SuperUser       IPX 16    8.2    July 27 1996 06:10 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: dspchec 7.1


Next Command:
```

Table 7-27 dspchec Parameters

Parameter	Description
channels	Specifies the channel or channels to display. For a CVM or CDP, the format is *slot.channel(s)*. For a UVM, the format is *slot.line.channel(s)*.

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).
- The status of the cards associated with the connection.
- Any Y-cable conflicts.
- The type of the compression, if applicable (VAD, ADPCM, LDCELP, DFM, frame relay).
- 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

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    SuperUser       IGX 16    8.2         Nov. 19 1996 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 7-28 dspcon Parameters

Parameter	Description
channel	Specifies the channel for the connection details display. The format for *channel* on a CDP or CVM is *slot.channel.* The format for a channel on a UVM is *slot.line.channel.* The command displays connection information for one channel at a time.

dspcond

Displays the signalling 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    8.2    Mar. 16 1996 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 7-29 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 7-30 shows the fields displayed in the **dspcons** screens.

Table 7-30 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: • 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.
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

dspcons

Description

Display a summary of all connections.

System Response

```
pubsipx1       TN    SuperUser       IPX 16    8.2    July 24 1996 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    SuperUser       BPX 15    8.2    July 25 1996 11:52 GMT

 Local           Remote      Remote                    Local     Remote
 Channel         NodeName    Channel         State      A-bit     A-bit
 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 7-31 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 *slot.channel*.The start channel on a UVM is *slot.line.channel*.
node name	Specifies that only connections to this remote node from the local note 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.

dspconst

Displays the status of the circuit line(s) and continues to display the status until the DEL key is depressed. 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 7-32 shows the connection type.

Table 7-32 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    8.2    Mar. 16 1996 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 2 2 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 7-33 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.

dspsigqual

Displays the configuration for the A, B, C, and D bit signalling qualifiers for all channels. The only parameter is the starting channel. You set the values for these signalling bits with the **cnfrcvsig** and **cnfxmtsig** commands. Note that these signaling bit states are different from the states during circuit alarm (signalling conditioning).

During normal operation of the voice circuit, the A, B, C, and D signalling 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 signalling qualifiers

Syntax

dspsigqual <start channel>

Related Commands

cnfxmtsig, cnfrcvsig

Attributes

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

Example 1

dspsigqual 8.1

Description

Display the channel signalling bit qualifiers for channel 8.1.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 23 1996 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 7-34 dspsigqual Parameters

Parameter	Description
start channel	Specifies the starting channel. On a CDP or CVM, the format is *slot.channel*. On a UVM, the format is *slot.line.channel*.

dspsvcst

Displays the voice SVC statistics.

Full Name

Display voice SVC statistics

Syntax

dspsvcst

Related Commands

Attributes

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

Example 1

dspsvcst

Description

Display the voice SVC statistics for the current node.

System Response

```
sw91           TN    SuperUser       IPX 8     8.2       May  29 1996 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 7-35 prtchcnf Parameters

Parameter	Description
start channel	Specifies the starting channel for the print output. The format is *slot.channel*.

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 7-36 prtchdlcnf Parameters

Parameter	Description
start channel	Specifies the starting channel for the print output. The format is *slot.channel*.

prtcons

Prints a summary of connections terminated at the IPX or IGX node.

Full Name

Print connections

Syntax

prtcons [start_channel] [nodename] [type] [+d]

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

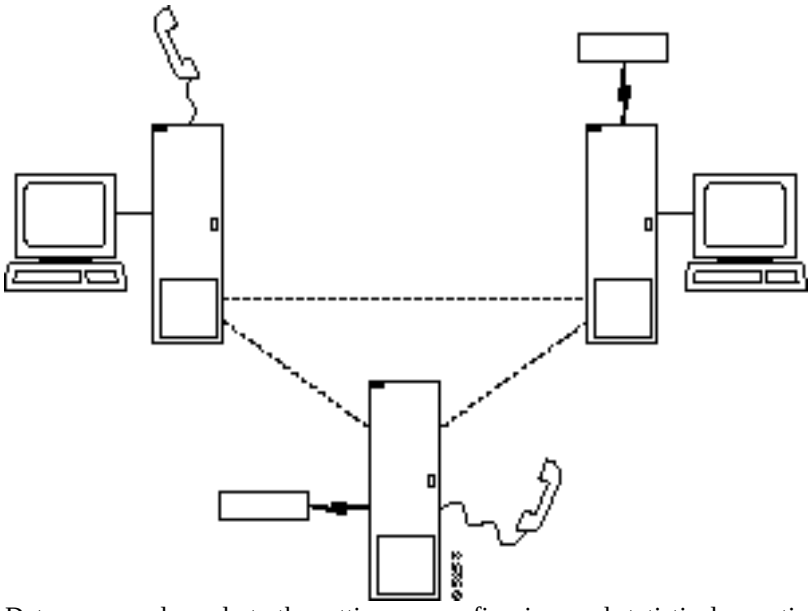
None available as this command produces hardcopy.

Table 7-37 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 note 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: -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.
+d	Specifies that the display should show the connection descriptor string in place of the usual compression and ownership fields.

CHAPTER

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 RS-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 the WAN Business Unit Technical Response Team (WANBU TRT). 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 8-1 lists the full command name and starting page of each description:

Table 8-1 Data Connection Commands

Mnemonic	Description	Page
addcon	Add connection	8-5
cnfchdfm	Configure Data Frame Multiplexing (DFM)	8-10
cnfcheia	Configure EIA	8-12
cnfcldir	Configure control lead direction	8-14
cnfdchtp	Configure data channel interface type	8-16
cnfdclk	Configure data clock	8-19
cnfict	Configure interface control template	8-23
cpyict	Copy interface control template	8-29
delcon	Delete connection	8-31
dspchcnf	Display channel configuration	8-33
dspcon	Display connection	8-35
dspcons	Display connections	8-37
dspict	Display interface control template	8-40
prtchcnf	Print channel configuration	8-42
prtcons	Print connections	8-43
prtict	Print interface control template	8-45

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 RatesTable 8-2 lists the 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 subrate DS0A): if you include the t-option, the IPX or IGX node does not check for supervisory or control information.

Table 8-2 Standard Data Rates

Standard Data Connection Rates					
1.2	3.6	8	16f	64f	230.4f
1.2/2	3.6/4	8/10	19.2	72	256f
1.2f/1	3.6f/2	8f	19.2f	76.8	288
1.2f/2	3.6f/5	9.6	24	84	336
1.8	4.8	9.6/10	24f	96	384f
1.8/2	4.8/4	9.6f	28.8	96f	448
1.8f/2	4.8/10	12	28.8f	112	448f
2.4	4.8f/5	12/10	32	112f	512
2.4/2	6.4	12.8	32f	115.	512f
2.4/4	6.4/4	12.8/10	38.4	128	672
2.4f/2	6.4/10	12f	48	128f	768
2.4f/5	6.4f/5	14.4	48f	144	2772
3.2	7.2	14.4/10	56	168	896
3.2/4	7.2/4	14f	56f	192	1024

Standard Data Connection Rates					
3.2f/2	7.2/10	16	57.6	224	1152
3.2f/5	7.2f/5	16.8	64	230.4	1344*
CDP or CVM super-rate types:(types indicate the number of 56 Kbps or 64 Kbps channels in the super-rate bundle—See Example 2)					
1x56	5x56		1x64	5x64	
2x56	6x56		2x64	6x64	
3x56	7x56		3x64	7x64	
4x56	8x56		4x64	8x64	
CDP or CVM subrate DS0A (transparent data rates)					
2.4t	4.8t	9.6t	56t		

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 user-data arrives with the 7/8 coding format, 7-bit bytes are used to build a packet. The user-data can have any format and can contain any pattern, including all “0”s. The single “1” inserted in the final bit position ensures that no more than seven consecutive “0”s occur in a byte. The 7/8 coding format is the safest mode to use when the data protocol is unknown.

When user-data arrives with the 8/8 coding format, 8-bit bytes are used to build a packet. The 8/8 coding format is more efficient than the 7/8 format, but the end-user equipment is responsible for meeting the T1 requirement of no more that 7 consecutive “0”s in a byte. If this requirement is not met, the IPX or IGX node inserts a “1” to invalidate the data. This mode can be used if the data or line protocol avoids long strings of zeros. An example line is a T1 trunk that uses B8ZS encoding.

When the arriving user-data has the 8/8I coding format, all 8 bits are used to form the bytes in a packet. The data is inverted so that 1s are changed to 0s, and 1s are changed to 0s. The end-user equipment must guard against data that contains over 7 consecutive “1”s in a byte, which (when inverted) would violate the T1 transmission requirement. This violation of the T1 transmission requirement would cause the IPX or IGX node to insert a “1” to invalidate the data. This format can be used for data protocols in which the idle codes are long strings of 0s, and the data bytes are scrambled.

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, Cisco suggests avoiding the use of trunks with zero code suppression (*z for avoid) because it 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    8.2    July 25 1996 06:23 PDT

 From           Remote      Remote
 6.1            NodeName    Channel         State  Type      Compress  Code COS
 6.1            pubsipx2    11.1            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 circuit line at node beta. Data rates are taken from the Standard Data Rate Connections in the preceding pages.

addcon slot.port remote nodename slot.start channel-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) circuit line 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 8-3 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.)	
node	Specifies the name of the node at the other end of the connection. For a DACS-type connection (where channels on a node are connected to channels on the same node), use the local node name.	
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:	
	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 8-4 addcon Optional Parameters

Parameter	Description	
avoid	Specifies the type of trunk for the connection to avoid. The default is no avoidance. The choices 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 0s.

cnfchdfm

Enables or disables DFM for individual channels and sets the DFM parameters for the channels. The default state when the (purchased) DFM feature is activated on a card is enabled. Because DFM is a purchased option, the WAN Business Unit Tactical Response Team (WANBU TRT) 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    8.2    Mar. 15 1996  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 8-5 cndchdfm 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 8-6 cndchdfm 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/sec, 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/sec in the same direction as that of the clock signal. For 1.544 Mbps data connections, this defaults to 0.

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    8.2    Mar. 15 1996 16:20 PST

            Maximum EIA      %       DFM Pattern    DFM
Channels    Update Rate    Util      Length         Status
5.1             15         100          8          Enabled




Last Command: cnfcheia 5.1 15


Next Command:
```

Table 8-7 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 RS-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 RS-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    8.2      Aug. 14 1996 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 8-8 cnfcldir Parameters

Parameter	Description
channel	Specifies the RS-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 RS-232 back card. It forces a back card slot from RS-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 or CVM 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    8.2    Mar. 15 1996 17:30 MST

Data Channel:      31.1
Interface:         DDS-4   OCU Config
Clocking:          Looped

            Interface Control Template for Connection while ACTIVE

 LeadOutput ValueLeadOutputValue
 DSRONCTSON
 DCDON




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    8.2    Mar. 15 1996  17:30 MST

Data Channel: 22.1
Interface:MissingDDS0A DCE Configuration
Clocking:Normal

            Interface Control Template for Connection while ACTIVE

 LeadOutput ValueLeadOutput Value
 DSRONCTSON
 DCDON




Last Command: cnfdchtp 22.1 dce t


Next Command:
```

Table 8-9 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 8-10 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

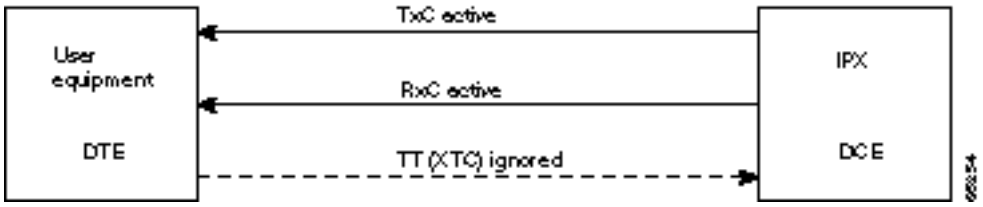
Configures the clocking for a data channel. In general, the clock configuration may be normal, split, or looped for an SDP or HDM (fewer options for an LDP or LDM). The clock configuration of each channel of a connection determines how the clock will be propagated through the network, and how external 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.

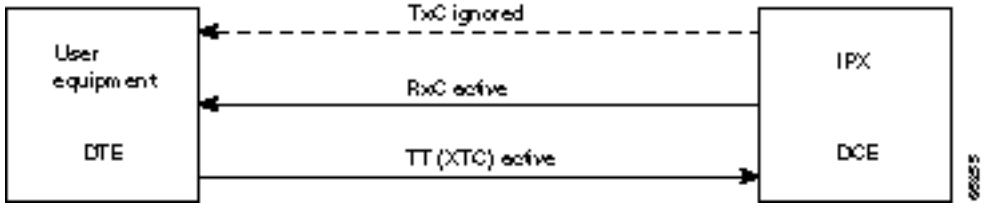
Figure 8-1 Normal Clocking on a DCE



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.

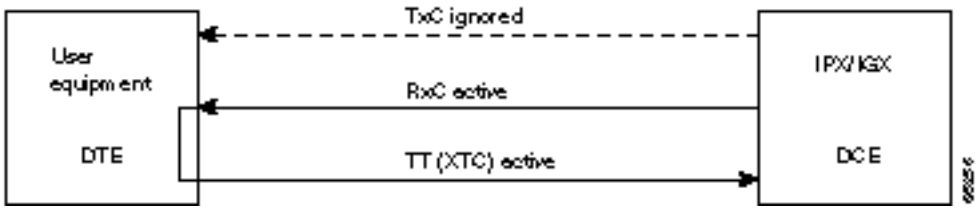
Figure 8-2 Split Clocking on a DCE



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.

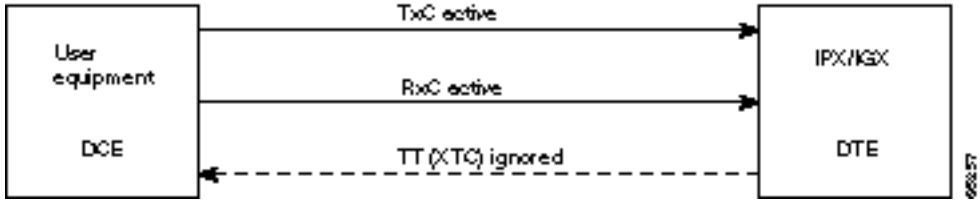
Figure 8-3 Looped Clocking on a DCE



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.

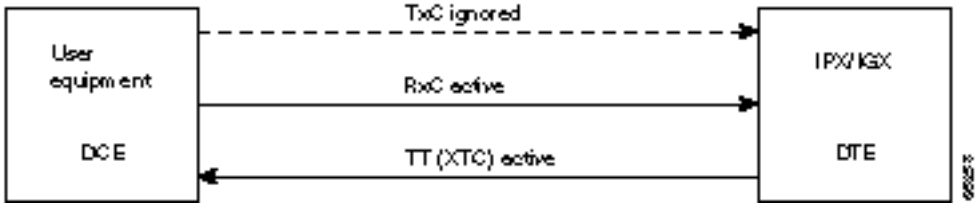
Figure 8-4 Normal Clocking on a DTE



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 8-5 Split Clocking on a DTE



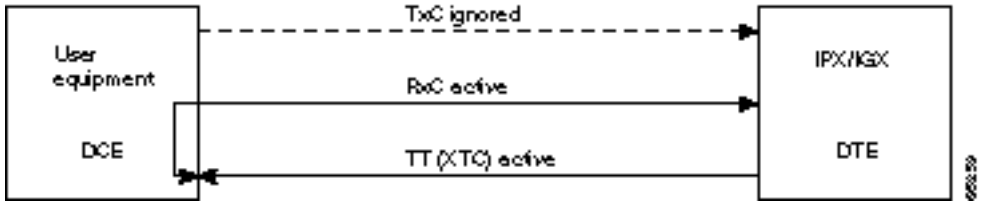
DTE Configured Data Port: Looped Clocking

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 8-6. 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 8-6 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    8.2    Mar. 23 1996 10:41 PST

Data Channel:      5.1
Interface:         V35   DCE
Clocking:          Normal

            Interface Control Template for Connection while ACTIVE

 LeadOutput ValueLeadOutput Value
 RI(J) OFFDSR (E)ON
 CTS(D) ON TM  (K)OFF
 DCD(F) ON




Last Command: cnfdclk 5.1 n


Next Command:
```

Table 8-11 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: n Normal. s Split. l 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 8-12 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 8-12 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 RS-232 port are bi-directional, and their default direction is input. See the **cnfcldir** 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

addextp, 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    8.2    Mar. 15 1996 17:30 MST

Data Channel:      31.1
Interface:         DDS-4   OCU Config
Clocking:          Looped

            Interface Control Template for Connection while CONDITIONED

LeadOutput ValueLeadOutput Value
SBON RIOFF
DSROFFCTSON
DCDOFF




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 (RS-232).

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 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 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    8.2    Mar. 23 1996 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 8-13 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 **tstport n** or an addextlp **n** 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** or an **addextlp f** on a port. The port is configured such that the external far-end modem is placed in a loopback.
output	Specifies the output lead to configure. Refer to the Configurable Lead information in the command description for valid abbreviations. 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]. 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	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 *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.	

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

cnfict 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    8.2   Mar. 15 1996 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 SRxDON
 DCR OFF DCD ON
 SCTS ON SDCDON
 SQ ON



Last Command: cpyict 25.1 25.2


Next Command:
```

Table 8-14 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    8.2       Aug. 14 1996 00:53 GMT

 Local          Remote      Remote
 Channel        NodeName    Channel         State  Type      Compress  Code COS
 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    8.5.1           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 8-15 delcon Parameters

Parameter	Description
channel	Specifies the data channel or channels to delete. The format is *slot.port*.

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    8.2 Jan. 9 1997  00:04 GMT

            Maximum EIA     %      DFM Pattern     DFM
Channels    Update Rate    Util      Length       Status
3.1-4             2        100         8         Enabled




Last Command: dspchcnf 3.1


Next Command:
```

Table 8-16 dspchcnf Parameters

Parameter	Description
start channel	Specifies the starting channel using the format *slot.port*

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, refer to the chapter titled “Optimizing Traffic Routing and Bandwidth.”
- The connection route. listing the end nodes and any intermediate nodes.
- The preferred route for the connection (if configured).
- 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

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    8.2       Aug. 14 1996 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 8-17 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 <*slot.channel*>.

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 8-18 describes the fields in the **dspcons** screens.

Table 8-18 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:	
	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.	
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.	

Full Name

Display connections

Syntax

dspcons [start_channel] [nodename] [connection type] [+d]

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:8.2     Mar. 16 1996 09:42 PST

 Local      Remote      Remote                                    Route
 Channel    NodeName    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 +d

Description

Display the connection with descriptors.

System Response

```
pubsipx1       TN    SuperUser       IPX 16    8.2    July 25 1996 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 8-19 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 note 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: -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.
+d	Specifies that the display should show the connection descriptor string in place of the usual compression and ownership fields.

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    8.2    Mar. 15 1996 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


Next Command:
```

Table 8-20 dspict Parameters

Parameter	Description
channel	Specifies the channel. The format of the channel specification is *slot.port*.
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. **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 8-21 prtchcnf Parameters

Parameter	Description
start channel	Specifies the channel at which the printout begins. The format is *slot.channel*.

prtcons

Prints a summary of connections terminated at the IPX or IGX node.

Full Name

Print connections

Syntax

prtcons [start_channel] [nodename] [type] [+d]

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 8-22 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 note 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.
+d	Specifies that the display should show the connection descriptor string in place of the usual compression and ownership fields.

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.

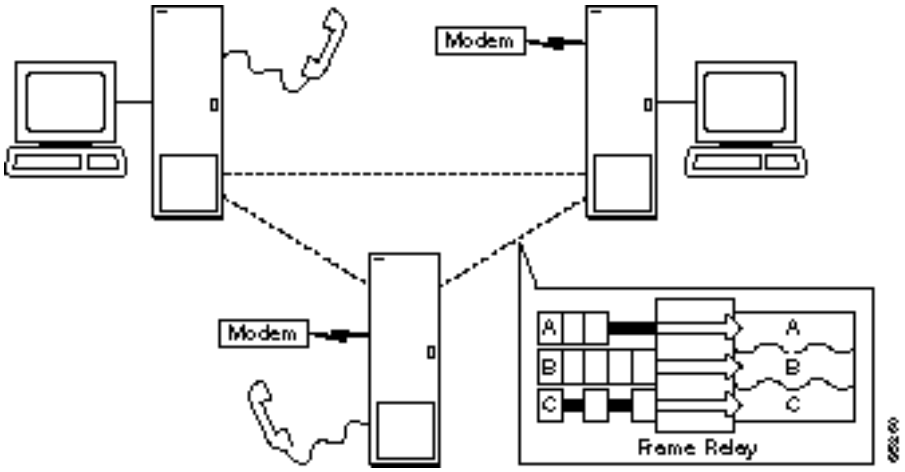
System Response

None as this command produces hardcopy.

Table 8-23 prtict Parameters

Parameter	Description
channel	Specifies the channel containing the data card. The start channel is specified as follows: slot.port
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. **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.

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
- Set up a frame relay connection group
- 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 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 (connected to a BPX), 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 lower-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 AXIS shelf): this path uses network interworking (NIW) to carry frame relay data encapsulated in ATM cells between an IPX or IGX 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 listed 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 Cisco 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 **cnffrcport** 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.

Setting Up a Frame Relay Connection Group

A frame relay *group* is a routing entity in which you can include up to 16 individual frame relay connections (or *virtual circuits*). Subsequently, the network can route the connections as a group.

1 Use the **addcongrp** command to set up a frame relay connection group. For example, if you want a connection group between local node “alpha” and remote node “beta,” enter:

addcongrp beta.1

The *group name* consists of the *remote node name* and a *group number.* The “1” is the number of the group between alpha and beta. The network establishes the connection group with the group name “beta.1” on node alpha. On node beta, the group name is “alpha.1.” You can specify any unused group number in the range 1–255. If you do not specify the group number, the system assigns the next higher, unused number.

After you finish **addcongrp**, the group exists but does not yet contain any frame relay circuits.

2 Initially, a group is empty. Use the **grpcon** command to assign up to a maximum of 16 frame relay connections to a group. The connections you include in the group must be inter-node, non-bundled, frame relay connections that already exist (through **addcon**). For example, to assign the connection 8.1.101 to the beta.1 connection group, enter:

grpcon beta.1 8.1.101

After you have assigned the group members, you can modify the routing parameters of the whole group (all the individual circuits in the group) by using the group name (*remote nodename.group number*) in the **cnfcos**, **upcon**, **dncon**, **cnfpref**, **dsprts**, and **dspcons** commands. For individual connections in the group, you can specify non-connection parameters such as the fail state, loop state, and configuration. Other frame relay connection group commands are:

dspcongrp, which displays the details of a connection group.

dspcongrps, which displays all connection groups at the node.

delcongrp, which deletes a connection group. Before deleting a group, you must empty the connection group by using the **delcon** command.

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 **cnffrcls**, 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 **dspportstats**.

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	9-8
addcongrp	Add connection group	9-18
addfrport	Add frame relay port	9-20
cnfchpri	Configure channel priority	9-23
cnfcondsc	Configure connection descriptor	9-25
cnffrcls	Configure frame relay class	9-27
cnffrcon	Configure frame relay connection	9-30
cnffrcport	Configure frame relay port on a Port Concentrator Shelf	9-33
cnffrport	Configure frame relay port	9-35
cnfict	Configure interface control template	9-46
cnfmode	Configure mode	9-51
cpyict	Copy interface control template	9-54
delcon	Delete connection	9-57
delcongrp	Delete connection group	9-59
delfrport	Delete frame relay port	9-61
dnfrport	Down frame relay port	9-63
dspchcnf	Display channel configuration	9-65
dspchstats	Display channel statistics	9-67
dspcon	Display connection	9-70
dspcongrp	Display connection group	9-72
dspcongrps	Display connection groups	9-74
dspcons	Display connections	9-76
dspfrcls	Display frame relay class	9-83
dspfrport	Display frame relay port	9-85
dspict	Display interface control template	9-92
dspmode	Display mode	9-95
dspmodes	Display modes	9-98
dspportids	Display port IDs	9-103

Mnemonic	Name	Page
dspportstats	Display port statistics	9-105
grpcon	Group connections	9-110
prtchcnf	Print channel configuration	9-113
prtcongrps	Print connection groups	9-114
prtcons	Print connections	9-115
prtict	Print interface control template	9-117
upfrport	Up frame relay port	9-118

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.

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 AXIS 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 **cnffrport** 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 **dspcons** display shows the entire bundle as a single item. Therefore, you cannot see the automatically assigned DLCIs on the **dspcons** screen. (The automatically assigned DLCIs in the preceding list appear in italics.) To see the DLCIs, use **dspcon**, as in the following example:

dspcon 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.

Grouped Connections

A frame relay connection you assign to a group is a *grouped* connection. A group can consist of up to 16 connections. Grouping involves three commands: **addcon**, **addcongrp**, and **grpcon**. First, before you can assign connections to a group, they must already exist as normal frame relay connections (through **addcon**). Next, define a *connection group* for the node using the **addcongrp** command. Lastly, add each connection to the group using the **grpcon** command. Refer to the descriptions of **addcongrp** and **grpcon** for more details.

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 Signalling Protocols

For any frame relay card set that has a maximum frame length of 4510 bytes, the use and type of signalling 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, upcon

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

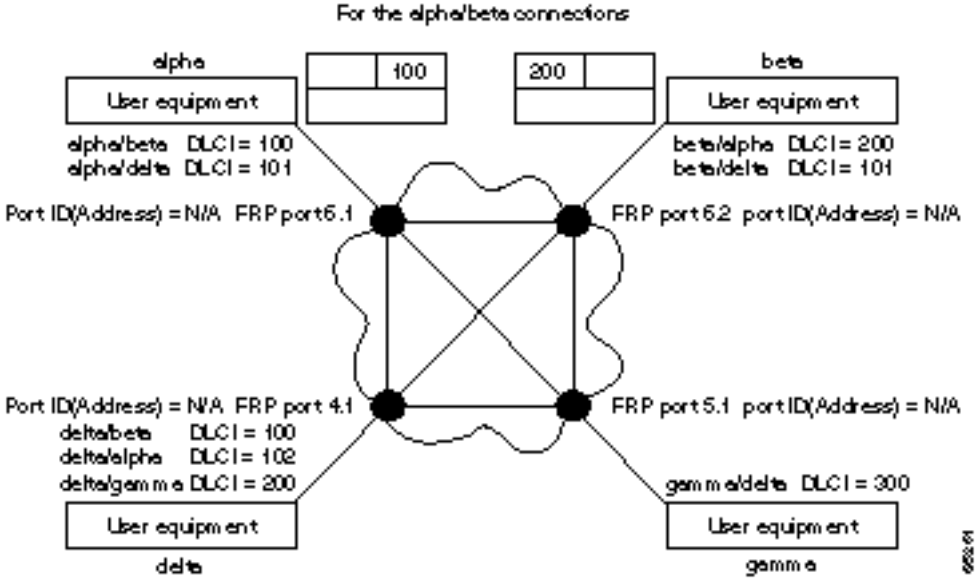
addcon 6.1 101 delta 4.1.102 2

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.



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    8.2    Mar. 23 1996 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                          0       L
 9.1.200 gamma   8.1.300    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: addcon 9.1.200 gamma 8.1.300 1

Next Command:
```

Example 2b

addcon 9.1.100 beta 6.2.300 2

Description

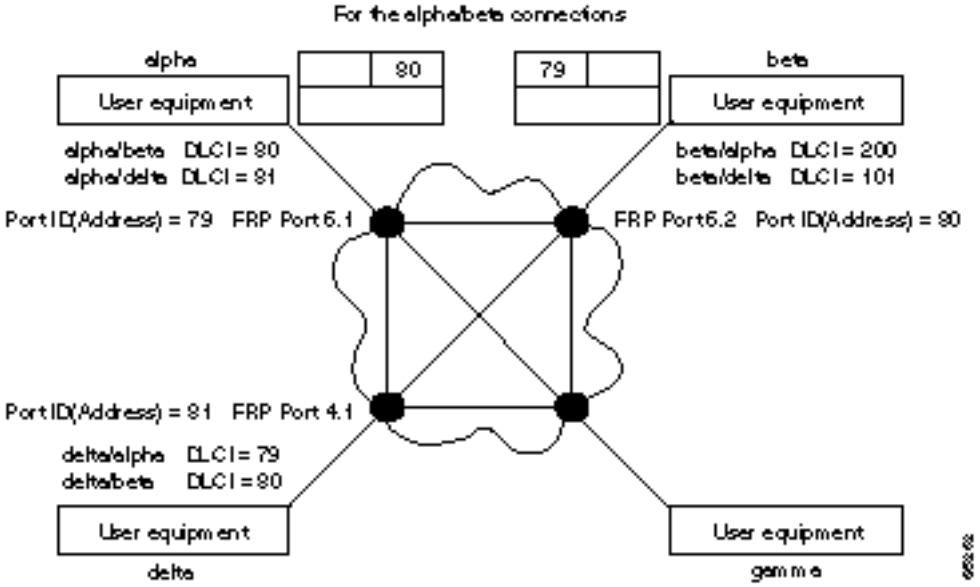
Add another connection at local port 9.1. A DLCI of 100 is used at the local node. A DLCI of 300 can be used at both beta gamma because the DLCIs have only local significance.

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     8.2 Jan. 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  NodeNameChannelState   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       R
8.2.300  beta    19.1.101Ok     fr                             0       R
15.1     alpha   14.1    Ok     v                              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    8.2   Mar. 23 1996 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  R
 8.2.300    beta        19.1.101    Ok     fr                              0  R
 15.1       alpha       14.1        Ok     v                               0  R




Last Command: dspcons


Next Command: addcon 8.3.101 beta 19.3.201 7 * * * * 30/30 * * Y 80/80
```

Table 9-1 addcon Parameters

Parameter	Description
local channel	Specifies the local channel to connect in the format: *slot.port.DLCI* | *x port* | .* On an FRP or FRM, the range for *port* is 1–24 or 1–31. On a UFM-C, the range for *port* is 1–250. (For connections on a UFM-C, *line* is not necessary because of the port-to-line mapping through **addfrport**). For a UFM-U, the range for *port* is 1–12 for V.35 or X.21 and 1–4 for HSSI. The range for *DLCI* is 16–1007.
node	Specifies the name of the remote node at the other end of the connection.
remote channel	Specifies the connection at the far end. For frame relay termination points, use: *slot.port.DLCI* | *x port* | .* If the far end is an ATM termination, use: *slot.port.vpi.vci* where *vpi* has a range of 0–255, and *vci* has a range of 1–4095 (except for an ALM/A, which has a vci range of 0–255). Access devices such as the Cisco 3800 use the following format for the remote channel specification: <*slot.port*> <*access_device_connection_ID*> where *slot* is the slot number of the FTC or FTM card, *port* is the port number, and *access_device_connection_ID* is in the range 1–252.

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 9-2 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 *con_type* entries are *atft* and *atfx*. 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: rcvFramesDscdUnknownProtocol or xmtFramesDscdUnknownProtocol.
frp_bw	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: Cisco Parameters — Standard Parameters PIR (peak information rate) — Be (excess burst) VC_Q (VC queue depth) — Bc (committed burst) When you are using the Cisco parameter set, the names and order of specification are as follows: MIR/MIR, CIR/CIR, VC_Q/VC_Q, PIR/PIR, Cmax/Cmax ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, %utl/%utl When you are using the parameters with the two Frame Relay Forum versions, the names and order of specification are as follows: MIR/MIR, CIR/CIR, Bc/Bc, Be/Be, Cmax/Cmax, ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, %utl/%utl 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.

Parameter	Description
avoid	Specifies the type of trunk or route to avoid for the connection. The default is no avoidance. To specify an *avoid* 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 *avoid* 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.

addcongrp

Defines a frame relay connection group between the local node and the specified remote node. The resulting connection group is a routing entity that is initially empty and into which individual connections (virtual circuits) may be added using the **grpcon** command. Connections added to a group must be of the inter-node, non-bundled, frame relay type. The connections must have the same routing parameters, such as owner, class of service (COS), routing state, route restrictions, and ForeSight enable status.

Connection grouping permits a node to have up to 1000 frame relay connections. A connection group can have up to 16 connections. Up to 250 connection groups can exist at a node. The **addcongrp** parameters, remote node name, followed by the period (“.”), followed by the group number, combine to provide a unique connection group name. If the remote node name only is entered in the command, the system automatically generates the period (“.”) and the group number. For group number, the system uses the next unused number between the two nodes. An example of a connection group name between the alpha and beta nodes is:

beta.1	at alpha
alpha.1	at beta

If a second group is created between alpha and beta with the **addcongrp** command but with no specified group number, the automatically generated group names for the second group would be:

beta.2	at alpha
alpha.2	at beta

Full Name

Add connection group

Syntax

addcongrp <remote node>[.group number]

Related Commands

delcongrp, grpcon, delcon, dspcongrps, dspcons, dspcongrp

Attributes

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

Example 1

addcongrp gamma

Description

Add a connection group gamma. If you enter only the remote node name, the system automatically generates a group number.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 15:49 MST

Only to                          Route
gamma            Count  State   Avoid  COS  FST  Owner
gamma.1          0                              Local









Last Command: addcongrp gamma


Next Command:
```

Table 9-3 addcongrp Parameters

Parameter	Description
remote node	Uses the name of the remote node as the name of the group.

Table 9-4 addcongrp Optional Parameters

Parameter	Description
group number	Specifies the number of a group. The range of group numbers is 1–250. A period separates the name of the remote node and the group number.

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 9-5 lists the error and warning messages for **addfrport**.

Table 9-5 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 range 1–24 or 1–31 (no 16 for E1).
"Channel is busy"	Channel is already assigned to a logical por.t
"You cannot use signalling 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

upcln, 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    8.2    Mar. 15 1996 17:28 CST

Port configuration for FRP 21

From       Chan       Speed      Interface  State
1          9–15       448        FRI T1     INACTIVE




Last Command: addfrport 21.9–15


Next Command:
```

Table 9-6 addfrport Parameters

Parameter	Description
slot.port (FRP or FRM series) slot.port line.DS0 channel (for UFM-C 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 *channel*) 12. 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 9-7 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 9-8 clrfrcportstats Parameters

Parameter	Description
slot,port | *	Slot and port of the physical port. The range for *port* 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.

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    8.2    Mar. 15 1996 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 9-9 cnfchpri Parameters

Parameter	Description
channels	Specifies the channel or range of channels. The format is *slot.port.DLCI*.
h | l	The priority: h = high; l = low.

cnfcondsc

Assigns a user-specified, reference description to a connection. The connection descriptor is independently configurable at each end of a connection**.** To remove a descriptor, enter this command and specify a null descriptor. A descriptor cannot be deleted in a job, just reconfigured. The **dspcon** and **dspcons +d** commands display any existing connection descriptors.

Full Name

Configure connection description

Syntax

cnfcondsc <channel> <descriptor>

Related Commands

dspcon, dspcons

Attributes

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

Example 1

cnfcondsc 5.1 gracie’s_fax

Description

Give a descriptive name to channel 5.1. In this example, the name “gracie's_fax” is given to the connection 5.1. If a descriptor is desired for the other end of the connection, the user can “**vt**” to the other end of the connection and use the **cnfcondsc** command on that connection. The same name can be assigned or a different name.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2     Mar. 15 1996 15:40 PST

Conn:  5.1        beta        25.1        256 7/8    Desc: gracie's_FAX



Owner: REMOTE  Restriction: NONE  COS: 0                    Status: OK
Compression: NONE

Path:     alpha   10-- 7beta
Pref:     Not Configured


alpha 5.1                                          beta 25.1
SDP:   OK                                          SDP:   OK
SDI:   OK                                          SDI:   OK
Clock: OK                                          Clock: OK

Last Command: cnfcondsc 5.1 gracie's_fax


Next Command:
```

Table 9-10 cnfcondsc Parameters

Parameter	Description
channel	Specifies the local voice, data, frame relay, or ATM channel to describe.
descriptor	Specifies a string of up to 20 displayable characters. The descriptor cannot begin with a number, and no spaces are allowed.

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    8.2    Mar. 15 1996 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: cnffrcls 1 * * * * * * * y


Continue (y): y
```

System Response (continued)

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 15 1996 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: cnffrcls 1 * * * * * * * y


Next Command:
```

Table 9-11 cnffrcls Parameters

Parameter	Description
class number	Specifies the connection class to configure. The range is 1–10.

Table 9-12 cnffrcls Optional Parameters

Parameter	Description
frp_bw	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: Cisco Parameters — Standard Parameters PIR (peak information rate) — Be (excess burst) VC_Q (VC queue depth) — Bc (committed burst) When you are using the Cisco parameter set, the names and order of specification are as follows: MIR/MIR, CIR/CIR, VC_Q/VC_Q, PIR/PIR, Cmax/Cmax ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, %utl/%utl When you are using the parameters with the two Frame Relay Forum versions, the names and order of specification are as follows: MIR/MIR, CIR/CIR, Bc/Bc, Be/Be, Cmax/Cmax, ECNQ_thresh/ECNQ_thresh, QIR/QIR, FST, %utl/%utl 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.
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 it 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 decide what the MIR should be.

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    8.2    Mar. 15 1996 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 9-13 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 9-14 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     8.2       Aug. 30 1996 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 9-15 cnffrcport Parameters

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 *configured* speed as Configured Clock and the *actual* 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 9-16 shows the supported data rates for individual T1 and E1 lines.

Table 9-16 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

Table 9-17 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 9-17 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.

Signalling Protocol Timers

This section introduces the implementation of two signalling timers and related parameters you can specify through the **cnffrport** command.

Periodically, devices use *signalling* to request the status of other, connected devices or networks. The signalling 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 signalling 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 signalling between networks mirror each other. (Figure 9-1 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 signalling 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.

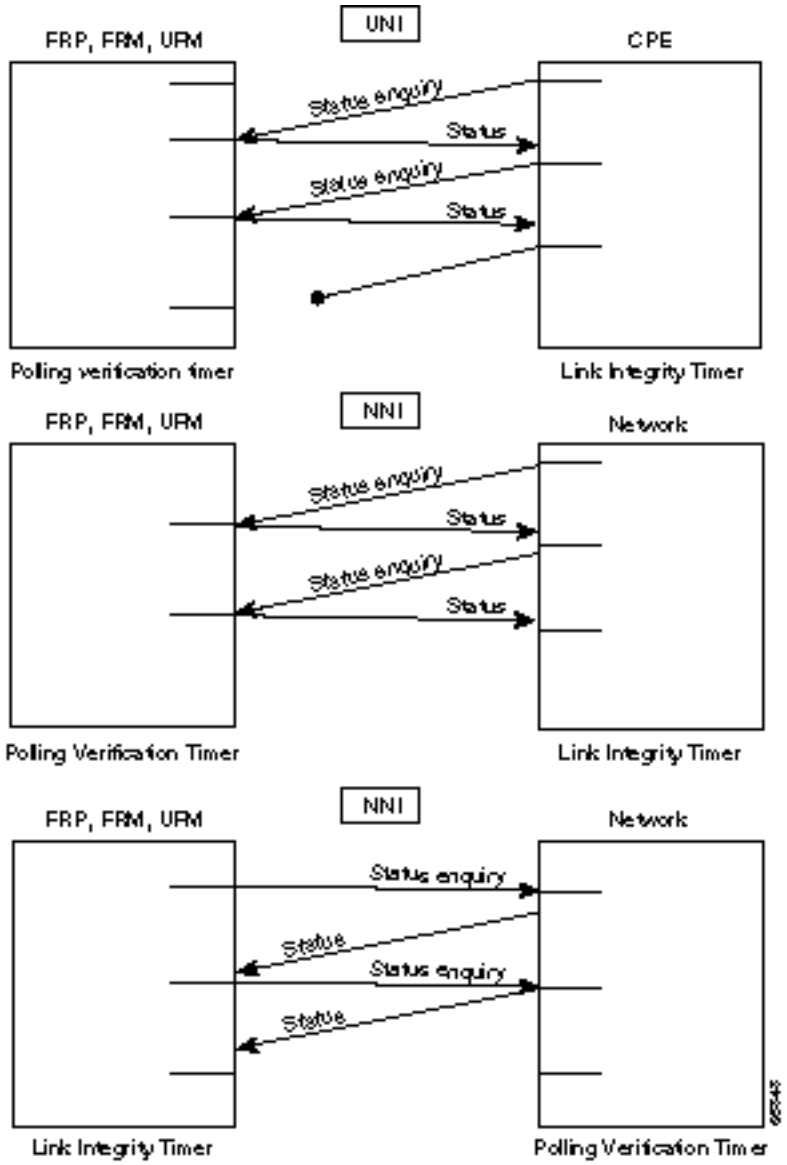
The frame relay port or user-device counts a user-specified number of errors out of a user-specified number of attempts before it signals a Port Communication Failure. These parameters are the *error threshold* and the *monitored events count*, respectively. The defaults for these parameters are 3 and 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 9-1 Signalling Protocol Timing



The 1 Mbps FRI

The data rates available with the 1 Mbps FRI are as follows:

Table 9-18 Data Rates for the 1-Mbps FRI

Port Data Rates in *Kbps* 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> <signalling protocol> [*protocol parameters*]

Syntax (Unchannelized ports on UFM-U)

cnffrport <slot.port> <port type> <port queue depth> <ecn queue threshold> <de threshold> <signalling protocol> [*protocol parameters*]

Syntax (T1/E1 ports on FRM or FRP)

cnffrport <slot.port> <port queue depth> <ecn queue threshold> <de threshold> <signalling 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> <signalling 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    8.2       Sep. 10 1996 16:25 GMT

Port:       3.1               [ACTIVE  ]
Interface:  FRI-T1                          Configured Clock:    64 Kbps
Clocking:   None                            Measured Rx Clock: None
                                      Min Flags / Frames           1
Port ID                          -    Channel Range                1
Port Queue Depth            48000     OAM Pkt Threshold            3 pkts
ECN Queue Threshold         48000     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
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     8.2       Sep. 10 1996 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 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.
• Signalling 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 comm 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.

```
sw180          TN    SuperUser       IGX 16    8.2 July 30 1997 00:09 GMT
Port:       13.1              [ACTIVE  ]
Interface:  V35     DCE                       Configured Clock:    256 Kbps
Clocking:   Normal                            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 9-19 cnffrport Parameters

Parameter	Description
slot.port	Specifies the logical port on the FRP, FRM, or UFM-U in the format *slot.port*. 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 *slot.port line* in the *Cisco IGX 8400 Series Reference* manual.) For a Port Concentrator Shelf, *port* is to the logical port in the range 1–44.
port type (for a UFM-U) For *port type* 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*slot.port*. Note that this *mode* 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.)	*Port type* for a PCS tells switch software whether the port is V.35, V.11 or V.28. *Port type* for a PCS does not actually configure the port: to configure the port, you must install the appropriate card in the PCS. See the *port type* 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 *port* can be 1–250, and *line* 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	Specifies a port clock speed in Kbps for a 2.0 Mbps UFM, FRP, or FRM. The *configured* speed appears under the Configured Clock heading. The *actual* 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: • 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) Refer to the table at the beginning of this command description for the available clock rates for all port combinations.
clocking	Specifies the port's clock type for HSSI, V.35, and X.21 lines. *Clocking* does not apply to T1, E1, or Port Concentrator lines. The clock is either *normal* or *looped*. 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: • 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). For a description of looped and normal clocking, refer to the *Cisco IGX 8400 Series Reference* manual, the *Cisco IPX Reference* manual, or the *Cisco WAN Switching System Overview.*
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 *port ID* 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
signalling protocol	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. For the *initial* port specification and *subsequent* 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): LMI = 0 LMI is disabled at this port. LMI = 1 Cisco LMI and the asynchronous update process is enabled at this port. Greenwich Mean Time is also enabled. LMI = 2 LMI is disabled at this port. LMI = 3 Cisco LMI is enabled at this port, but asynchronous update process is disabled. LMI = 4 The port configuration is UNI using CCITT Q.933 Annex A parameters. LMI = 5 The port configuration is UNI using ANSI T1.617 Annex D parameters. LMI = 6 The port configuration is NNI using CCITT Q.933 Annex A parameters. LMI = 7 The port configuration is NNI using ANSI T1.617 Annex D parameters. For any frame relay card set that has a maximum frame length of 4510 bytes, the use and type of a signalling 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: For Annex A: 899 For Annex D: 899 For StrataLMI: 562 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.
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 *receiver not ready* (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 Frame Relay BECN bit to the EFCI bit in a FastPacket.
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	Specifies how many OAM FastPackets must arrive from a remote NNI port before the local port generates "A-bit = 0" in the signalling 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 *OAM FastPacket threshold* setting applies to UNI and NNI ports. The following two paragraphs provide a more detailed explanation of the A-bit and *OAM FastPacket threshold* usage. On any frame relay port (UNI or NNI) that is using a signalling 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: • 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) 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.

Parameter	Description
link integrity timer (T391)	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. 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 signalling 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.)
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 *link integrity timer* 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 *link integrity timer* 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 *all* 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 *card type* just after the *slot.port* during the command specification phase of **addjob**. Valid *card types* 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 **cnffrcls**, you must first enable *IDE to DE mapping*. 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 *channel range* 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 9-20 Configurable Lead Listing

Source	IPX/IGX name	RS-232C	RS-232D	RS-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)

Source	IPX/IGX name	RS-232C	RS-232D	RS-449	V.35	X.21	Fast EIA	CCITT (ITU-T) Equivalent	Function
DCE	SI	CI	CI	SI				112	Signal Rate Select (to DTE)
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

Asterisk (**) 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 **cnfcldir** 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. This means that when the port is active, the CTS lead is asserted.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 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    8.2    Mar. 23 1996 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    8.2    Mar. 15 1996 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:
```

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 *slot.port*		
template	Specifies which interface control template to configure for the channel and has the format: a/c/l/n/f. Valid entries are:		
	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.
	n	Near loopback	The "near" template is in effect when running a **tstport n** or an **addextlp n** 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** or an **addextlp f** 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:		
	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 *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.	

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 9-21 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 9-21 Card Modes for Unchannelized Back Cards

	V.35 and X.21 Ports												HSSI Ports			
	Group A				Group B				Group C				A		B	
Mode	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    8.2 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 9-22 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 *Cisco IGX 8400 Series Reference.*

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 SLDP/LDP/FRP interface control template

Syntax

cpyict <source_port> <destination_port>

Related Commands

cnfic, 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    8.2    Mar. 15 1996 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    8.2    Mar. 15 1996 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 9-23 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    8.2    Mar. 15 1996 15:43 MST

 Local      Remote      Remote                                      Route
 Channel    NodeName    Channel    State  Type    Compression  Code Avoid COS O
 19.1.101   gamma       8.2.300    Ok     fr                           0  L
 19.2.302   alpha       9.2.400    Ok     fr                           0  R
 25.2       gamma       6.1        Ok     256                 7/8      0  L




Last Command:


Next Command: delcon 25.1
```

Table 9-24 delcon Parameters

Parameter	Description
channel	Specifies the channel or set of channels in the following format: slot.port.DLCI. On an FRP or FRM, the range for *port* is 1–24 or 1–31. On a UFM-C, the range for *port* is 1–250. (For connections on a UFM-C, *line* is not necessary because of the port-to-line mapping through **addfrport**). For a UFM-U, the range for *port* 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 *port* can be only "1"). The range for *DLCI* is typically 16–1007.

delcongrp

Deletes a group. The group must be empty (all connections must first have been removed with the **delcon** command). You can delete a group from either the local or remote end of the group.

Full Name

Delete connection group

Syntax

delcongrp [remote node] <connection group>

Related Commands

dspcongrp, grpcon, delcon, dspcongrps, dspcons, addcongrp

Attributes

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

Example 1

delcongrp gamma.1

Description

Delete connection group gamma.1.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 16:19 MST

                                    Route
Group            Count  State  Avoid  COS  FST  Owner









Last Command:

Next Command:  delcongrp gamma.1
```

Table 9-25 delcongrp Parameters

Parameter	Description
remote node	Specifies the name of the remote node of the connection group.
group number	Specifies the number of the group (between 1 and 250) to delete between the local and remote nodes.

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 **addfrport** command). The port display (normally visible through **dspfrport** 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 9-26 delfrport Warnings and 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 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

addfrport, 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    8.2    Mar. 15 1996 17:28 CST

Port configuration for FRP 8

From       Chan    Speed   Interface  State
1          9-15    448     FRI T1     ACTIVE
20         20-24   320     FRI T1     ACTIVE




Last Command: delfrport 8.1


Next Command:
```

Table 9-27 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

delfrport 3.1

Description

Down frame relay port 3.1.

System Response

```
pubsigx1       TN    SuperUser       IGX 32    8.2      Aug. 14 1996 03:49 GMT

Port:       3.1               [INACTIVE]
Interface:  FRI-T1                          Configured Clock:    64 Kbps
Clocking:   None                            Measured Rx Clock: None
                                      Min Flags / Frames           1
Port ID                          -    Channel Range                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    Channel Speed               64
N393 Monitored Events Count      4
Communicate Priority            No
Upper/Lower RNR Thresh  75%/ 25%

Last Command: dnfrport 3.1


Next Command:
```

Table 9-28 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 *slot*. 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    8.2    Mar. 15 1996 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 9-29 dspchcnf Parameters

Parameter	Description
channel	Specifies the channel at which the display begins. The format is *slot.port.DLCI.* 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 (received from the attached device into the node)
- To the network (transmitted from the node into the network)
- Discarded (received from the attached device but not transmitted to the network)
- From the network (received from the network into the node)
- To the port (transmitted from the node to the attached device)
- 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    8.2    Aug. 7 1996  04:04 PDT

Channel Statistics: 5.1.100       Cleared: July 25 1996 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)  (%)                      (pps)
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 9-30 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 *slot.port.*

Table 9-31 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)
- 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 connection descriptor (if configured)
- 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 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 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, cnfcondsc, cnfcos, cnfpref, 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.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 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
Group: NONE  Priority: L  TestRTD: 0 msec

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 9-32 dspcon Parameters

Parameter	Description
channel	Specifies the channel in the format *slot.port.DLCI*. The **dspcon** command displays information for one connection at a time.

dspcongrp

Displays detailed information for a connection group.

Full Name

Display connection with a group

Syntax

dspcongrp [remote nodename] <connection group>

Related Commands

delcongrp, grpcon, delcon, dspcongrps, dspcons, addcongrp

Attributes

Privilege	1
Jobs	No
Log	No
Node	IPX, BGX, IGX
Lock	No

Example 1

dspcongrp gamma 1

Description

Display connection group gamma.1. The “g” after the connection type indicates a group.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 15:56 MST

 Local      Remote      Remote                     Only in          Route
 Channel    NodeName    Channel    State  Type     Group            Avoid COS O
 19.1.101   gamma       8.2.300    Ok     fr(g)  gamma.1                 0  L




Last Command: dspcongrp gamma.1


Next Command:
```

Table 9-33 dspcongrp Parameters

Parameter	Description
remote node	Specifies the name of the remote node of the connection group.
group number	Specifies the number of the group (between 1 and 250) between the local and remote nodes to display.

dspcongrps

Displays current connection groups.

Full Name

Display connection groups

Syntax

dspcongrps [node name | group name]

Related Commands

delcongrp, grpcon, delcon, dspcongrp, dspcons, addcongrp

Attributes

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

Example 1

dspcongrps

Description

Display all the current connection groups.

System Response

```
beta          TRM     YourID:1         IPX 32    8.2   Mar. 15 1996 15:56 MST

 Route
Group      Count   State      Avoid       COS FST        Owner
gamma.1    1          Ok                   0    n         Local
gamma.2    6          Ok                   0    n         Local
gamma.3    12         Ok                   0    n         Local









Last Command: dspcongrps


Next Command:
```

Example 2

dspcongrps alpha

Description

Display the connection groups between the local node and the remote node *alpha.*

Example 3

dspcongrps alpha.1

Description

Display connection group *alpha.1*

Table 9-34 dspcongrps Optional Parameters

Parameter	Description
remote node	Specifies the name of the remote node.
group number	Specifies the remote node name and group number of the connection to display.

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 9-35 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:	
	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.	
Descriptor	The connection descriptor string.	
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*] [+d] [–f] [–v] [–d] [–g] [–atfr] [–abit] [–fabit] [–fail] [–down] [-siw]

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    8.2       Feb. 14 1996 12:58 PST

 From           Remote      Remote
 3.1.27         NodeName    Channel         State  Type      Compress  Code COS
 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    8.2    Mar. 15 1996 15:37 MST

 Local      Remote      Remote                                        Route
 Channel    NodeName    Channel    State  Type    Compression  Code Avoid COS O
 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 19.1.101 +d

Description

Display connections starting at 19.1.101 and include any connection descriptors. (A connection descriptor is specified by the **cnfcondsc** command.)

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 15:39 MST

 Local      Remote      Remote
 Channel    NodeName    Channel    State  Type            Descriptor
 19.1.101   gamma       8.2.300    Ok     fr              Igantius
 19.2.302   alpha       9.2.400    Ok     fr              Xavier
 25.2       gamma       6.1        Ok     256             Jogues




Last Command: dspcons +d


Next Command:
```

Example 4

dspcons –f

Description

Display frame relay connections only.

System Response

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 15:38 MST

 Local      Remote      Remote            Only                      Route
 Channel    NodeName    Channel    State  f       Compression  Code Avoid COS O
 19.1.101   gamma       8.2.300    Ok     fr                           0  L
 19.2.302   alpha       9.2.400    Ok     fr                           0  R









Last Command: dspcons –f


Next Command:
```

Example 5

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    8.2      Feb. 14 1996 13:02 PST

 Local          Remote      Remote                    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 9-36 dspcons Optional Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. Specify *start channel* in one of the following formats: *slot.port.DLCI* (frame relay channel) *remote node.group_name* (frame relay group connection) If you do not specify a starting channel, the display begins at the first connection.
node name	Specifies that only connections to this remote node from the local note be displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed
(connection types)	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.

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    8.2      Aug. 23 1996 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 9-37 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 Signalling 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    8.2    Mar. 15 1996 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

```
pubsipx1       TN    SuperUser       IPX 16    8.2    Sep. 7 1996  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

```
sw109          VT    SuperUser       IGX 16    8.2 Jan. 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    8.2     Apr. 6 1996  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    8.2       July 7 1996  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 9-38 dspfrcport Displayed PCS Parameters

Field	Meaning
Interface	Always *FRI-X.21 DCE* for PCS ports.
Clocking	Always *Normal* 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.
Signalling Protocol	For Frame Relay ports, specifies LMI operation mode. For PCS ports, this is set to *None*.
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

dspfrcport 3.1

Description

Display the configuration of port 3.1.

System Response

```
tecate         LAN   SuperUser       IPX 16 8.2     Apr. 6 1996  10:25 PST
Physical Port:       3.1           [ACTIVE]
Interface:  FRI-X.21 DCE                      Configured Clock:   512 Kbps
Clocking:   Normal                           Measured Rx Clock:  512 Kbps
Port Type                    FR       Min Flags / Frames           1
Port ID                    1022
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       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: dspfrcport 3.1


Next Command:
```

Table 9-39 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 5 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 scree 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    8.2    Mar. 15 1996 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    8.2    Mar. 23 1996 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 9-40 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 9-41 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 9-41 Card Modes for Unchannelized Back Cards

	V.35 and X.21 Ports												HSSI Ports			
	Group A				Group B				Group C				A		B	
Mode	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

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

```
sw180          TN    SuperUser       IGX 16    8.2 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:
```

Table 9-42 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 **dspmode**s 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    8.2 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 (see Example 1) is as follows:

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, dspfrcport, dspfrcbob, 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    8.2       July 7 1996  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    8.2    July 7 1996  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 9-43 dsppcs Optional Parameters

Parameter	Description
slot	Specifies slot associated with the ports you want to display.

dspportids

Displays *port ids*. The 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 to 1024. The command for specifying port ids 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    8.2    Mar. 15 1996 15:55 PST

Frame Relay Port IDs
ID   Node
7    alpha    |
9    alpha    |









Last Command: dspportids


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 from the user-device at the port.

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 Interfaces (UNI) ports (connections to user-devices) are displayed with one screen. The following lists the usage statistics displayed in screen 1.

Table 9-44 UNI Port Statistics for Frame Relay

Frame Errors	LMI Statistics	Misc. 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
	Signalling 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, the second screen is displayed 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 9-45 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	
Signalling Protocol	

The command displays the following statistics: frame error, LMI, and miscellaneous. A summary and description of these statistics follows:

Table 9-46 Frame Error Statistics

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 9-47 LMI Statistics

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.
Signalling 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 9-48 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.
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    8.2     Mar. 21 1996 12:44 PST

Port Statistics for 4.1         Cleared: Mar. 21 1996 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               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 Dropd         0


Last Command: dspportstats 4.1


Continue to next page? (y/n)
```

Enter “y” to see subsequent screens.

```
alpha32        LAN   SuperUser       IPX 32    8.2     Mar. 21 1996 12:49 PST

Port Statistics for 4.1         Cleared: Mar. 21 1996 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 Xmt               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: dspportstats 4.1


Hit DEL key to quit:
```

Table 9-49 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 9-50 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.

grpcon

Adds a connection to a group. Adding a connection to a group has two prerequisites:

- The connection must already exist on the node (see the **addcon** command).
- The group must already exist (see the **addcongrp** command).

Use **grpcon** to add either a single connection or a range of connections to a group. Through the optional [channel ... channel] format, you can add up to 16 connections to a group with one command. Only inter-node, non-bundled frame relay connections can go into a group. Grouped connections must also have the same endpoints, routing characteristics, and ForeSight-enable status.

The first connection added to a group determines the routing characteristics for the entire group. All subsequent connections must match the first connection's characteristics of ownership, COS, routing state, routing restrictions, and ForeSight. Attempting to add a mismatched connection results in the error message "mismatched connection/group." For example, the ownership of both the connection group and the connection itself must be either local or remote. After you add a connection to a group, you can specify non-connection parameters for an individual connection in the group. Examples of non-connection parameters are fail state and loop state.

No single command exists to remove an individual connection from a group. To remove a connection from a group, first delete the connection using **delcon** then add it again with **addcon**.

Full Name

Add Frame Relay connections to group

Syntax

grpcon <connection group> <chan> [<chan> ... <chan>]

Related Commands

delcongrp, addcongrp, delcon, dspcongrps, dspcons, dspcongrp

Attributes

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

Example 1

grpcon beta.1 9.2.400

Description

Add connection 9.2.400 to group beta.1.

System Response

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

 Local      Remote      Remote                                      Route
 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
 9.1.200    gamma       8.1.300    Ok     fr                              0  L
 9.2.400    beta        19.2.302   Ok     fr(g)                        0        L
 14.1       gamma       15.1       Ok     v                               0  L




Last Command: dspcons


Next Command: grpcon beta.1 9.2.400
```

Example 2

grpcon alpha.1 8.4.330 8.4.331 8.4.340

Description

Add multiple FR connections, for example, 8.4.330, 8.4.331, and 8.4.340 to group beta.1. The screen example shows the previous addition to a group. The “g” after the connection type indicates a group.

System Response

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

 Local      Remote      Remote                                      Route
 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
 9.1.200    gamma       8.1.300    Ok     fr                              0  L
 9.2.400    beta        19.2.302   Ok     fr(g)                        0        L
 14.1       gamma       15.1       Ok     v                               0  L




Last Command: grpcon beta.1 9.2.400


Next Command: grpcon alpha.1 8.4.330 8.4.331 8.4.340
```

Table 9-51 grpcon Parameters

Parameter	Description
group name	Specifies the name of the existing group. It has the format: remote node.group number
channel	Specifies the connection(s) to add to the group.

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

prtcongrps

Prints information for all groups of which this node is an endpoint. This command uses the same syntax, and prints the same information as is displayed using the **dspcongrps** command. See the **dspcongrps** command for syntax and output information.

Full Name

Print connection group

Syntax

prtcongrps [node name | group name] (see the **dspcongrps** command)

Related Commands

dspcongrps

Attributes

Privilege	1–6
Jobs	Yes
Log	No
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 9-52 prtcons Optional Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. Specify *start channel* in one of the following formats: *slot.port.DLCI* (frame relay channel) *remote node.group_name* (frame relay group connection) If no starting channel is specified, the display begins with the first connected channel.
node name	Specifies that only connections to the remote node from the local note are displayed. If no "nodename" is designated, connections from the local node to all other nodes are displayed.
–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	Types listed in Syntax section. The state that may be displayed for frame relay and NNI connection types includes: 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.

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 9-53 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.

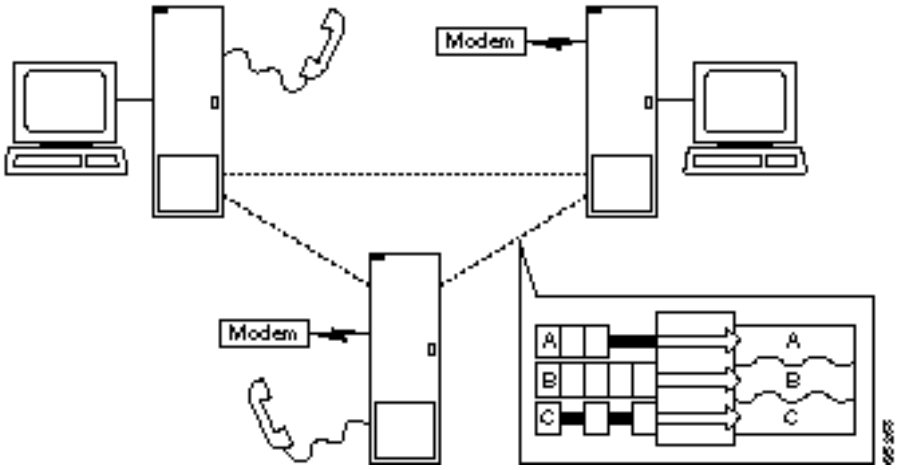
System Response

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 15 1996 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 9-54 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 apply to activating and configuring ATM connections and statistical reporting for these connections at an ATM UNI in a BPX or IGX node. You can add ATM connections to an ASI or BNI in a BPX node or to an ALM/A in an IGX node. Table 10-1 lists the ATM 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 10-1 ATM UNI Cards

Application	Front Card	Back Card
ATM UNI Card	ALM/A	BC-UAI-1T3 or BC-UAI-1E3
ATM UNI Card	ASI-T3	LM-2T3 (Two ports)
ATM UNI Card	ASI-E3	LM-2E3 (Two ports)
ATM UNI Card	ASI-155	MMF-2-BC
ATM UNI Card	ASI-155	SMF-2-BC
ATM UNI Card	ASI-155	SMF LR-2-BC

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 (1–4) 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 **upport** and **cnfport** 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.
- dspcons Displays the connections on a specified ATM line.
- dsplnutl Displays the line utilization for an ATM line.

Summary of Commands

Table 10-2 lists the full name and location of each ATM connection command.

Table 10-2 ATM Connection Commands

Mnemonic	Description	Page
addcon	Add connection	10-6
addcongrp	Add connection group	10-16
clrchstats	Clear channel statistics	10-18
cnfcls	Configure class	10-20
cnfconsc	Configure connection	10-24
cnfport	Configure port	10-26
cnfportq	Configure port queue	10-29
delcon	Delete connection	10-31
delcongrp	Delete connection group	10-33
dnport	Down port	10-35
dspchstats	Display channel statistics	10-37
dspcls	Display class	10-40
dspcon	Display connection	10-42
dspconcnf	Display connection configuration	10-46
dspcongrp	Display connections in a group	10-48
dspcongrps	Display connection groups	10-50
dspcons	Display connections	10-52
dsplmistats	Display LMI statistics	10-56
dspport	Display port	10-58
dspportq	Display port queue	10-61
dspportstats	Display Port Statistics	10-63
grpcon	Group a connection	10-65
upport	Up port	10-67

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 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 node on which **addcon** executes is the "owner" of the connection. Connection ownership is important because automatic rerouting and preferred routing information for a connection is entered on the node that owns the connection. See the **cnfpref** and **cnfcos** descriptions for information on automatic rerouting.

The displayed parameter prompts depend on the connection type. Before the switch actually adds a connection, the proposed connection appears on the screen with a prompt for confirmation. After **addcon** executes, the system software automatically routes the connection.

The node on which **addcon** executes is the *owner* of the connection. Connection ownership is important because automatic rerouting and preferred routing information for a connection is entered on the node that owns the connection. See the **cnfpref** and **cnfcos** descriptions for information on automatic rerouting.

The displayed parameter prompts depend on the connection type. Before the switch actually adds a connection, the proposed connection appears on the screen with a prompt for confirmation. After **addcon** executes, the system software automatically routes the connection. Figure 10-2, and Figure 10-3 are flow diagrams showing the sequence of possible parameter prompts according to the connection type and whether Usage Parameter Control (UPC) is enabled. The flow diagrams begin at the point after you have entered the local VPI and VCI, remote node name, remote VPI and VCI (or DLCI for service interworking), and *con_type* (VBR, CBR, ABR, ATFR, ATFST, ATFT, ATFTFST, ATFX, or ATFXFST). The subsequent tables define the parameters and list the defaults and ranges for each parameter. Refer to the *Cisco WAN Switching System Overview* and the ATM Forum specifications for more details on ATM parameters and concepts such as the *leaky buckets* for controlling cell admissions to the network.

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. CDVT (0) means CDVT for cells with CLP=0. PCR(0) means PCR for cells with CLP=0. For a description of CLP and CDVT usage and policing concepts in general, refer to the *Cisco WAN Switching System Overview* and the ATM Forum specifications.

Figure 10-1 Prompt Sequence for a CBR Connection

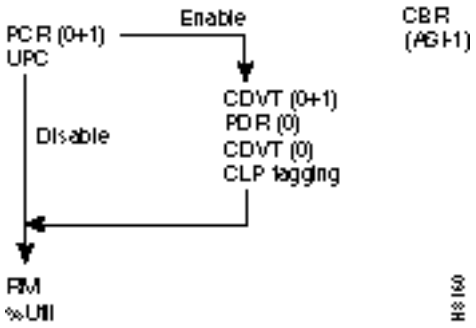


Figure 10-2 Prompt Sequence for a VBR/ATFR/ATFT/ATFX Connection

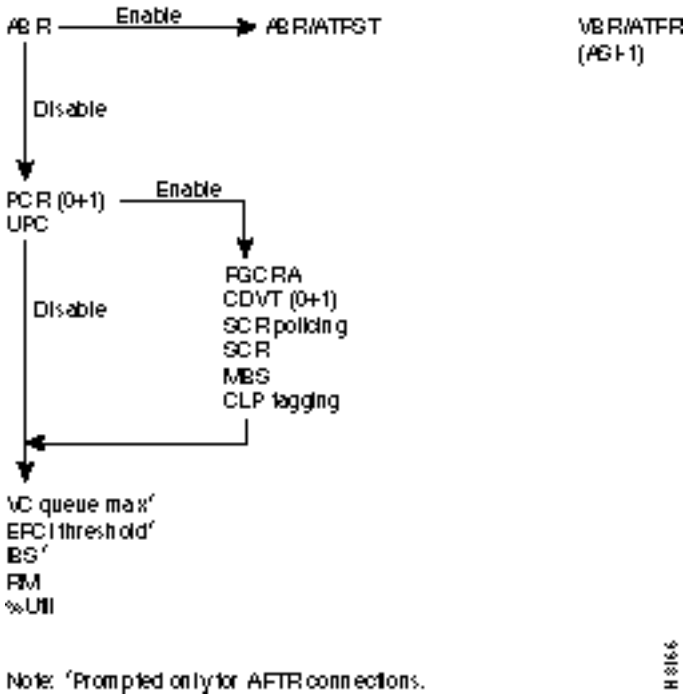
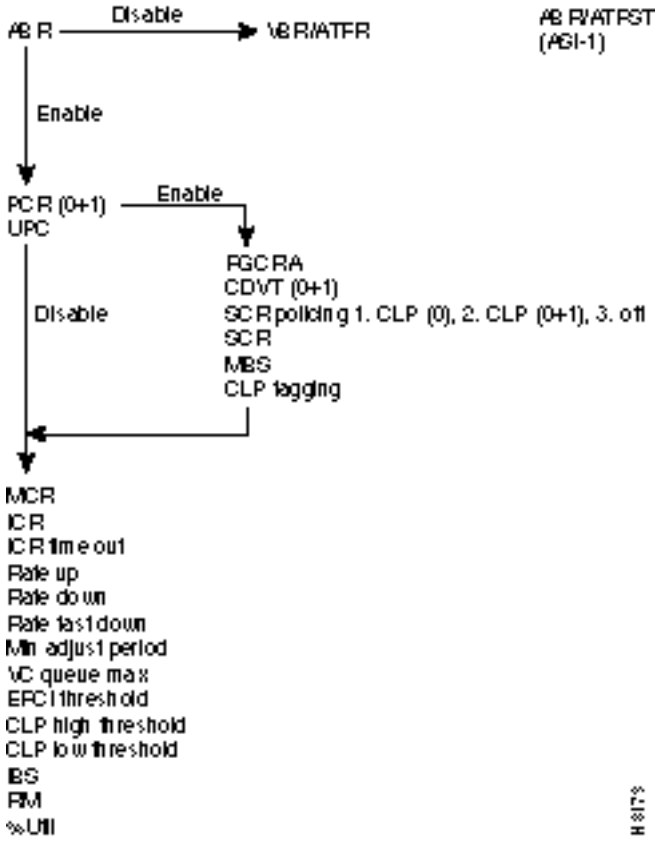


Figure 10-3 Prompt Sequence for a ABR/ATFST/ATFTFST/ATFXFST Connection



The following table contains descriptions of the ATM parameters that appear on screen. The subsequent table gives the defaults, ranges (or values), and granularity for each parameter. The last section contains screen examples. The preceding flow diagrams help clarify the information in these forthcoming sections.

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, as the text shows.

Table 10-3 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 *slot.port.vpi.vci.* 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 standard range for a vci is 1–4095. On an ALM/A, the vci range is 0–255. The vci can be an asterisk (*) to indicate the connection is a *virtual path*, in which case the vci does not provide a distinction within the network.
remote node name	Specifies the name of the node at the other (or remote) end of the connection.

Parameter/Prompt	Description
remote channel	Specifies the remote node's slot, port, vpi, and vci for this ATM connection. The format is *slot.port.vpi.vci*. The vpi and vci ranges are as follows: 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 *virtual path* (the vci does not provide a distinction within the network). For service interworking, the remote channel has the format *slot.port.DLCI*.
connection type	Specifies one of the following connection types: VBR—Variable Bit Rate, applies to ATM-only connections added at the ASI. CBR—Constant Bit Rate, applies to ATM-only connections added at the ASI. ABR—Available Bit Rate, applies to ATM-only connections added at the ASI. ATFR—Network interworking for a connection added to a BNI attached to an MGX 8220 shelf. The near-end frame relay card is the FRSM in the MGX 8220 shelf. The far-end is a UFM/FRM/FRP. The ATFR connection type directs the AIT, BTM, or ALM/B in the IPX or IGX node to perform network interworking on the connection. ATFST—Network interworking for a connection added to a BNI attached to an MGX 8220 shelf. The near-end frame relay card is the FRSM in the MGX 8220 shelf. The far-end is a UFM/FRM/FRP. The ATFST connection type specifies ForeSight and directs the AIT, BTM, or ALM/B in the IPX or IGX node to perform network interworking on the connection. ATFT—Service interworking in transparent mode: this connection type applies to connections with a frame relay endpoint and an ATM endpoint. You can add the connection at an ASI for standard ATM connections at the UNI or a BNI that connects to an ATM card in an MGX 8220 shelf. The endpoint cards must be capable of supporting service interworking. On the IGX node, the only card capable of supporting SIW is the UFM. ATFTFST—Same as ATFT except that the connection also has ForeSight. ATFX—Service interworking with translation of encapsulation protocols: this connection type applies to a connection that has a frame relay endpoint and an ATM endpoint. You can add the connection at an ASI for standard ATM connections at the UNI or a BNI with a segment terminating on an ATM card in an MGX 8220 shelf. The "X" ("translation") means the protocols for encapsulating headers are translated. ATFXFST—Same as ATFX but with ForeSight. The parameters that follow the *con_type* entry depend on the chosen connection type. Refer to the flow diagrams in Figure 10-1, Figure 10-2, or Figure 10-3. The option for choosing a class *number* is also available. The class is a *template* for a connection type. This 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**.

Parameter/Prompt	Description
ABR	T3/E3: Enables/disables ForeSight. Refer to the flow diagrams on the preceding pages for help with the following explanation: If the connection type selected at the "connection class" prompt was VBR and ABR is *enabled* at this prompt, the connection type changes to ABR, and prompts for ABR parameters subsequently appear. On the other hand, if the selected connection type is ABR and ABR is *disabled* at this ABR prompt, the connection type changes to VBR, so only VBR parameters are requested.
PCR(0+1)	T3/E3: Specifies the transmit/receive Peak Cell Rate (PCR) for cells leaving the first leaky bucket on the ASI card with CLP(0+1). Applies to only CBR connections. OC3 (STM1): Specifies the transmit/receive Peak Cell Rate (PCR). The range is 10 cps up to the maximum line rate. (See table of defaults and ranges.)
UPC	T3/E3 or OC3 (STM1): Enables/disables Usage Parameter Control (UPC). With UPC, additional user-specified parameters become available for each connection type. Refer to the preceding flow diagrams to see the parameters available for each connection type. The system uses the default if no parameter change occurs. See next table for defaults.
FGCRA	T3/E3: Enables either the Frame-Based Generic Cell Rate Algorithm (FGCRA) or the standard GCRA (the default). FGCRA controls automatic cell discarding (or tagging) of the remainder of a frame when one cell from the frame is non-compliant. FGCRA is a Cisco enhancement of the ATM-UNI Generic Cell Rate Algorithm (GCRA) for associating a cell with the frame from which it originated. Cisco supports configuration on a per-connection basis.
CDVT(0+1)	T3/E3 or OC3 (STM1): Specifies the transmit/receive Cell Delay Variation Tolerance (CDVT) for the *first* leaky bucket, which applies to cells with CLP(0+1). CDVT is the maximum time for accumulated violations of cell-arrival time parameters.
PCR(0)	T3/E3: Specifies the transmit/receive Peak Cell Rate (PCR) for cells leaving the second leaky bucket [CLP(0)] on the ASI card. OC3 (STM1): PCR(0) not used by ASI-2 OC3 (STM1).
CDVT(0)	T3/E3: Specifies the transmit/receive Cell Delay Variation Tolerance (CDVT) for the second leaky bucket. The *second* bucket applies to cells with CLP(0). CDVT is the maximum time for accumulated violations of cell-arrival time parameters. OC3 (STM1): CDVT(0) not used by ASI-2 OC3 (STM1) card.
SCR policing	T3/E3: Specifies the traffic policing for a VBR or ABR connection. The possible policing configurations are SCR policing of CLP (0+1) (which is selected as SCR#2), SCR policing of CLP(0) (which is selected as SCR#1), or SCR policing off (SCR#3). The SCR Policing parameter is not used by ASI-2 OC3 (STM1) card.
SCR	T3/E3: Sustainable Cell Rate (SCR) specifies a compliant cell rate threshold for transmit/receive. SCR is available with ABR and VBR connections and is less than or equal to the Peak Cell Rate (PCR). The ASI-2 OC3 (STM1) card does not use SCR policing.
MBS	T3/E3 or OC3 (STM1): The transmit/receive Maximum Burst Size for SCR policing.
CLP tagging	T3/E3 and OC3 (STM1): Enables/disables Cell Loss Priority (CLP) tagging. If CLP tagging is enabled, the CLP bit is set as a result of a UPC violation.

Parameter/Prompt	Description
MCR	T3/E3: Specifies the transmit/receive Minimum Cell Rate (MCR) for ABR connections.
ICR	T3/E3: Specifies the transmit/receive Initial Cell Rate. ICR is the rate that occurs after a period of inactivity on an ABR connection. (This period is the value of ICR TO). The cell rate then goes up or down under the control of the ForeSight Rate Control Algorithm. The range is 0 cps through the line's maximum. The ICR default is a range under the control of the ForeSight Rate Control Algorithm. See also the descriptions of Rate Up and Rate Dn.
ICR TO	T3/E3: ICR timeout. Specifies a period of inactivity before a connection's cell rate is reset to the specified ICR.
Rate Up	T3/E3: Specifies the increment in cell rate when the rate goes up. This ForeSight Rate Up increment is in cells per second per adjustment.
Rate Dn	T3/E3: Specifies large reductions in the transmit/receive cell rate. This ForeSight Rate Down value is a percentage of the current rate.
Rate FastDn	T3/E3: Specifies a rate of decrease in the transmit/receive cell rate when ForeSight quickly adjusts the rate down. This value is a percentage of the SCR.
Minimum Adjust	T3/E3: Minimum Adjust Period specifies the interval before the ingress sends rate adjustments for ABR connections. This is the time period before either a rate adjustment is made or a message is sent that an adjustment is not necessary. It serves as a stand-in round trip delay until a true RTD is measured. Older software refers to this as Maximum Adjust Rate.
VC Qdepth	T3/E3: Specifies the maximum ABR VC queue depth for transmit/receive.
EFCI	T3/E3: The transmit/receive percent of ABR VC queue depth that causes EFCI to be set.
CLP Hi	T3/E3: Specifies a percent of the transmit/receive ABR VC queue depth. When a transmit/receive threshold is exceeded, the node discards cells with CLP=1 in the connection until the VC queue level falls below the depth specified by CLP lo.
CLP Lo	T3/E3: Specifies a percent of the transmit/receive ABR VC queue depth such that, when the VC queue level falls below this level, the node stops discarding CLP=1 cells.
IBS	T3/E3: Initial Burst Size (IBS) for transmit/receive. Applies to only ABR connections.
RM	T3/E3: Enables Resource Management cells to go to a port on an ASI. RM cells provide backwards congestion notification, which subsequently goes to external equipment. For BNI cards, leave RM disabled. In older software, the name of this parameter is BCM.
% Util	T3/E3: Specifies the percent of bandwidth utilization for a connection. The allocation of trunk bandwidth that is based on %util depends on the connection type, as follows: For CBR, the default is 100%, and the bandwidth allocation is PCR(0+1) * %util. For VBR, the default in the command prompt is the *minimum* of either 100% or 120(SCR/PCR). The bandwidth allocation is PCR(0+1) * %util. For ABR, the default is 100%. The bandwidth allocation is MCR * %util.

Table 10-4 addcon Parameter Defaults and Ranges

Parameter	Range or Value	Default	Dependency	Granularity
ABR	enable/disable	VBR: disable ATFR: disable ABR: enable ATFST: enable		n/a
PCR(0+1)	PCR in cells/sec 7–96000:T3 7–80000: E3 7–353200: OC3 (STM1)	10	Range is limited to 7–5333 cps for ATFR connections.	10 cps
UPC	enable/disable	enable		n/a
FGCRA	enable/disable	disable		n/a
CDVT(0+1)	CDVT, in microsecs. 0-250000: T3/E3 and OC3/STM1	CBR: 10000 All others: 250000		1 microsec.
PCR(0)	PCR in cells/sec 7–96000:T3 7–80000: E3	PCR(0+1)	PCR(0) <= PCR(0+1).	10 cps
CDVT(0)	CDVT uSec 0-250000: T3/E3	CDVT(0+1)		1 microsec.
SCR policing	1-3 1 = CLP(0) 2 = CLP(0+1) 3 = Off	1		n/a
SCR	SCR in cells/sec 7–96000:T3 7–80000: E3 7–353200: OC3/STM1	Value of PCR(0+1)	SCR <= PCR(0+1). Range is limited to 7–5333 cps for ATFR connections. Upper limit = max line rate.	10 cps
MBS	MBS in cells 1–24000: T3/E3 10–1000: OC3 (STM1)	1000		1 cell
CLP tagging	enable/disable	enable	For SCR Policing CLP(0+1), tagging always disabled	n/a
MCR	MCR in cells/sec 0–96000:T3 0–80000: E3	ABR: 0 ATFST: 10	MCR <= PCR(0+1). Range is limited to 7–5333 cps for ATFST cons.	10 cps
ICR	ICR in cells/sec 0–96000:T3 0–80000: E3	Maximum of: MCR or PCR(0+1)/10	ICR >= MCR and ICR <= PCR(0+1). Range is limited to 7–5333 cps for ATFST connections.	10 cps
ICR time out	1–255 Seconds	10		1 second

Parameter	Range or Value	Default	Dependency	Granularity
Rate up increment	In Cells/Sec/Adjust 10–96000	Maximum of: 10% of MCR or 2000		10 cells
Rate down	1–100%	87%		1%
Rate fast down	1–100%	50%		1%
Min. adjust period	20–250 msec	40		10 msec
VC Qdepth	ABR: 1–64000 cells ATFR: 1-1366	ABR: 16000 ATFR: 1366	Does not apply to OC3/STM1	1 cell
EFCI threshold	1–100% of VC queue depth	100%		1%
CLP high threshold	1–100% of VCqueue depth	90%		1%
CLP low threshold	1-100% of VCqueue depth	80%		1%
IBS	ABR: 0–24000 cells ATFR: 1–107 cells	0		1 cell
RM	enable/disable	disable		n/a
% utilization Note: For ABR and VBR-type connections, (including service interworking connections, %util is the percent of utilization of the PCR.	1–100%	CBR:100% ABR:100% VBR: minimum of 120% * (SCR/PCR(0+1)) or 100%		1%

Full Name

Add a connection

Syntax

addcon *parameters* (see flow diagrams in Figure 10-1, Figure 10-2, and Figure 10-3 and the descriptions Table 10-3 and Table 10-4)

Related Commands

delcon, dspcons

Attributes

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

Example 1

addcon 4.1.2.1 sw53 4.1.2.2

Description

Add a connection between 4.1.2.1 on node swstorm and 4.1.4.2 on node sw53.

System Response

```
swstorm        TN    SuperUser       BPX 15    8.2    July 26 1996 20:05 GMT

 Local           Remote      Remote                              Route
 Channel         NodeName    Channel         State  Type         Avoid COS O
 4.1.2.1         sw53        4.1.4.2         Ok     atfr                0  L
```

```
This Command: addcon 4.1.2.1 sw53 4.1.4.2 atfr * * * * * * * * * * * * * *

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

Example 2

addcon 3.2.9.251 nmsbpx04 5.2.7.251 (with defaults illustrated)

In this case, the screen shows the value for each parameter entered on the command line.

System Response

```
nmsbpx03       TN    SuperUser       BPX 15    8.2    Nov. 3 1996  18:02 PDT

 Local           Remote      Remote                            Route
 Channel         NodeName    Channel         State  Type       Avoid COS O
 3.2.9.251       nmsbpx04    5.2.7.251       Ok     abr               0  L




This Command: addcon 3.2.9.251 nmsbpx04 5.2.7.251 abr e 10 10 1000 e 10 10 10 10
 110 87 50 100 64000 100 100 d e 100 90 e

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

addcongrp

Sets up a group to which ATM connections between the local node and a remote node are added. The connection group is a routing entity that is initially empty and to which individual connections (virtual circuits) are added using the **grpcon** command. Connections added to a group must be of the inter-node, non-bundled, ATM type. The connections must have the same routing parameters. These parameters include connection owner, class of service (COS), connection state, route restrictions, and ForeSight enable status.

Connection grouping permits an IPX or IGX node to have up to 1000 connections and a BPX node to have up to 5000 connections. A connection group may have up to 16 connections.

Full Name

Add connection group

Syntax

addcongrp <remote node> [.group number]

Related Commands

grpcon, delcongrp, dspcongrp, dspcongrps

Attributes

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

Example 1

addcongrp bpx4

Description

Add a connection group to node bpx4. The system adds the connection and automatically creates the group name with the ".1" appended to the remote node name.

System Response

```
bpx1           TN    SuperUser       BPX 15    8.2       Feb. 14 1996 19:53 PST

Only to                        Route
bpx4             Count  State  Avoid  COS  FST  Owner
bpx4.1           0                              Local









Last Command: addcongrp bpx4


Next Command:
```

Table 10-5 addcongrp Parameters

Parameter	Description
remote node name	Specifies the name of the remote node to which the grouped connections are routed.

Table 10-6 addcongrp Optional Parameters

Parameter	Description
.number	Users have the option of specifying the appended group number. Without a user-specified number, the system assigns the next available number.

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    8.2       Apr. 23 1996 19:24 PST

Channel Statistics: 3.1.1         Cleared: Apr. 17 1996 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              238         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 10-7 clrchstats Parameters

Parameter	Description
channel	Specifies the channel whose statistics are cleared.
*	Specifies all channel statistics.

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 display prompts for parameters.

System Response

```
night          TN    SuperUser       BPX 15    8.2    July 28 1996 13:02 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"


This Command: cnfcls 1


Enter class type (VBR, CBR, ABR, ATFR):
```

Table 10-8 cnfcls Parameters

Parameter	Description
class	Specifies the class to configure. The class numbers are 1–10.

Table 10-9 cnfcls Optional Parameters

Parameter	Description
optional parameters	Individual parameters are specific to the type of connection (CBR, VBR, ABR, ATFR). Use the **dspcls** 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    8.2     Mar. 29 1996 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 10-10 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 10-11 cnfcon Optional Parameters

Parameter	Description
bandwidth parameters	Refer to the **addcon** command in this chapter for descriptions and connection types.

cnfcondsc

Assigns a user-specified, reference description to a connection. The connection descriptor is independently configurable at each end of a connection**.** To remove a descriptor, enter this command and specify a null descriptor. A descriptor cannot be deleted in a job, just reconfigured. The **dspcon** and **dspcons +d** commands display any existing connection descriptors.

Full Name

Configure connection description

Syntax

cnfcondsc <channel> <descriptor>

Related Commands

dspcon, dspcons

Attributes

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

Example 1

cnfcondsc 5.1 darjeeling

Description

Assign the descriptive name “darjeeling” to channel 5.1. To assign this descriptor at the other end of the connection, **vt** to the other end of the connection, enter **cnfcondsc**, and specify the name “darjeeling.“

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2     Mar. 15 1996 15:40 PST

Conn:  5.1        beta        25.1        256 7/8    Desc: gracie's_FAX


Owner: REMOTE  Restriction: NONE  COS: 0                    Status: OK
Compression: NONE

Path:     alpha   10-- 7beta
Pref:     Not Configured


alpha 5.1                                          beta 25.1
SDP:   OK                                          SDP:   OK
SDI:   OK                                          SDI:   OK
Clock: OK                                          Clock: OK

Last Command: cnfcondsc 5.1 darjeeling


Next Command:
```

Table 10-12 cnfcondsc Parameters

Parameter	Description
channel	Specifies the local voice, data, frame relay, or ATM channel to describe.
descriptor	Specifies a string of up to 20 characters. The descriptor cannot begin with a number, and no spaces are allowed.

cnfport

Configures the parameters of an ATM port on an ASI card. 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
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    8.2      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 10-13 cnfport 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.
axis	Specifies MGX 8220 shelf 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 *and* the ATM cloud consists of Cisco WAN switching nodes only.
protocol	Specifies the use of either an LMI protocol, an protocol, or no specified protocol.

Parameter	Description
%util	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**. 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. The port queue bandwidth with %util feature *disabled* is: • For ABR connections: Port Queue BW = sum (MCR) • For VBR connections: Port Queue BW = sum (PCR) • For CBR connections: Port Queue BW = sum (PCR) 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. In summary, the port queue bandwidth with feature %util *enabled* is: • 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 card. To keep the current for any displayed parameter, press the Return key without typing anything.

Full Name

Configure port

Syntax

cnfport <port> [<params>]

Related Commands

upport, dnport, dspportq

Attributes

Privilege	2
Jobs	Yes
Log	Yes
Node	BPX
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. Note that the sequence of three Ns is in response to questions about the interface, a cell header, and the presence of an MGX 8220 shelf.

System Response

```
ca19           VT    SuperUser       BPX 15    8.2    Mar. 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 10-14 cnfportq 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.
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.

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 **dspcons** 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, 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    8.2    Mar. 23 1996 20:36 GMT

 Local          Remote      Remote                              Route
 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
 4.2.1.1        ca20        12.2.1.1       Ok     CBR                 0  L
 4.2.1.2        ca20        12.2.1.2       Ok     VBR                 0  L
 4.2.1.3        ca20        12.2.1.3       Ok     ABR                 0  L




Last Command: delcon 4.1.1.4

Delete connections? (y)
Next Command:
```

Table 10-15 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

delcongrp

Deletes a group. The group must be empty (all connections must first have been removed with the **delcon** command). The group can be deleted from either the local or remote end of the group.

Full Name

Delete connection group

Syntax

delcongrp <connection group>

Related Commands

addcongrp, dspcongrp, dspcongrps, grpcon

Attributes

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

Example 1

delcongrp bpx4.1

Description

Delete connection group bpx4.1.

System Response

```
bpx1           TN    SuperUser       BPX 15    8.2       Feb. 14 1996 20:12 PST

                                     Route
Group            Count  State  Avoid  COS  FST  Owner
bpx4.1           0                               Local









This Command: delcongrp bpx4.1


Delete this group (y/n)?
```

Table 10-16 delcongrp PArameters

Parameter	Description
connection group	The connection group has the following format: remote node name.group number

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    8.2    Mar. 23 1996 19:49 GMT

ASI Port States
Port  State
4.1   ACTIVE
4.2   INACTIVE




Last Command: dspports


Next Command: dnport 4.2
```

Table 10-17 dnport Parameters

Parameter	Description
slot . port	Specifies the shelf slot number and port numbers

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    8.2       July 17 1996 02:46 GMT

Channel Statistics for 4.1.50.1    Cleared: July 13 1996 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
                            OAM           Cells      RsrcOVL  :             0
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 131.100 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.

System Response

```
sw142          TN    SuperUser       IGX 16    8.2 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:
```

Table 10-18 dspchstats Parameters

Parameter	Description
channel	Specifies the channel for statistics display.

Table 10-19 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    8.2    July 28 1996 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 10-20 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.
- The class of service (COS) of the connection.
- The connection route, listing the end nodes and any intermediate nodes.
- 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 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, dspcon

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    8.2     Mar. 29 1996 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   SuperUser       BPX 15    8.2     Mar. 29 1996 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


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    8.2     Mar. 29 1996 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
  ForeSightRTD: 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    8.2    July 26 1996 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 10-21 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 4.1.2.1

Description

Display the configuration for 4.1.2.1.

System Response

```
sw53           TN    SuperUser       BPX 15    8.2    July 26 1996 13:52 GMT

Conn:  4.1.2.1          sw53        4.3.2.1          atfst
Description:

UPC       SCR           IBS           MBS      ABR      MCR            PCR
 y      25/25         10/10       1000/1000     y     25/25          25/25

     ICR        ICR TO Rate Up Rate Dn Rate FastDn Max Adjust       VC Qdepth
   25/25          10      40      87        50        100        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




Last Command: dspconcnf 4.1.2.1


Next Command:
```

Table 10-22 dspconcnf 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

dspcongrp

Displays the connections in a particular group. The information displayed consists of:

- Each connection in the group
- The node name at the remote end of the connection
- The state of the connection
- The connection type
- The routing restriction (route avoid)
- The class of service (COS) of the connection
- The owner of the connection

Failures that affect a connection appear flashing on screen. For frame relay NNI ports, the NNI value indicates the A-bit value received across the NNI from the remote network.

Full Name

Display connection group

Syntax

dspcongrp <connection group>

Related Commands

addcon, cnfcon, dspcon

Attributes

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

Example 1

dspcongrp sw86.14

Description

Display the connections in the group named sw86.14.

System Response

```
sw81           TN    SuperUser       BPX 15    8.2    Jan. 29 1996 17:43 PST

 Local          Remote      Remote                              Route
 Channel        NodeName    Channel        State  Type         Avoid COS O
 13.1.1.209     sw86        12.1.1.209     Ok     abr-Grp             0  R
 13.1.1.210     sw86        12.1.1.210     Ok     abr-Grp             0  R
 13.1.1.211     sw86        12.1.1.211     Ok     abr-Grp             0  R
 13.1.1.212     sw86        12.1.1.212     Ok     abr-Grp             0  R
 13.1.1.213     sw86        12.1.1.213     Ok     abr-Grp             0  R
 13.1.1.214     sw86        12.1.1.214     Ok     abr-Grp             0  R
 13.1.1.215     sw86        12.1.1.215     Ok     abr-Grp             0  R
 13.1.1.216     sw86        12.1.1.216     Ok     abr-Grp             0  R
 13.1.1.217     sw86        12.1.1.217     Ok     abr-Grp             0  R
 13.1.1.218     sw86        12.1.1.218     Ok     abr-Grp             0  R
 13.1.1.219     sw86        12.1.1.219     Ok     abr-Grp             0  R
 13.1.1.220     sw86        12.1.1.220     Ok     abr-Grp             0  R
 13.1.1.221     sw86        12.1.1.221     Ok     abr-Grp             0  R

This Command: dspcongrp sw86.14


Continue?
```

Table 10-23 dspcongrp Parameters

Parameter	Description
group	Specifies the group whose members are listed. The name can be obtained from the **dspcongrps** command.

dspcongrps

Displays a list of all grouped connections on the current node. The optional parameter narrows the scope of the list to grouped connections either on a named node or in a named group. The displayed information consists of:

- The node name and the count that each group represents for that node
- The number of connections in each group
- The state of the connection group
- Any specified route to avoid
- The Class of Service for the group
- Whether the connections have ForeSight
- Whether the owner of the group is a remote node or the local node

Full Name

Display connection groups

Syntax

dspcongrps [node name | group name]

Related Commands

addcongrp, dspcongrp

Attributes

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

Example 1

dspcongrps

Description

Display all grouped connections.

System Response

```
sw81           TN    SuperUser       BPX 15    8.2    Jan. 29 1996 16:51 PST

From                           Route
sw86.28          Count  State  Avoid  COS  FST  Owner
sw86.28          16     Ok             0    y   Remote
sw86.29          16     Ok             0    y   Remote
sw86.30          16     Ok             0    y   Remote
sw86.31          16     Ok             0    y   Remote
sw86.32          16     Ok             0    y   Remote




Last Command: dspcongrps


Next Command:
```

Table 10-24 dspcongrps Optional Parameters

Parameter	Description
node name or group name	Restricts the groups displayed to either a node name or a connection group name.

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 *Cisco MGX 8220 Command Reference*.)

Table 10-25 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 10-25 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.	
	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*] [+d] [-f] [-v] [-d] [-g] [-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
+d	equals display the connection's optional descriptor specified by the **cnfcondsc** command
-f	equals display frame relay connection only
-v	equals display only voice connections

-d	equals display only data connections and do so in Kbps.
-g	equals display only grouped connections
-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
-down	equals show only downed connections

Note NOTE: Some parameters may supersede other parameters.

Related Commands

addcon, delcon, cnfcondsc

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    8.2    Mar. 23 1996 19:44 GMT

 Local          Remote      Remote                            Route
 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    8.2       Feb. 14 1996 10:32 PST

 Local          Remote      Remote                    Local     Remote
 Channel        NodeName    Channel         State      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 10-26 dspcons Optional Parameters

Parameter	Description
start channel	Specifies the beginning channel to display. The *start channel* format is: *slot.port.vpi.vci* 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.
+d	Connection descriptor
-g	Grouped connections
-atfr	Frame relay to ATM interworking connections
-abit	A-bit status
-fabit	Connections with A-bit errors
-fail	Failed connections
-down	Downed connections

dsplmistats

Displays LMI statistics for a specified channel.

Full Name

Display connections

Syntax

dsplmistats

Related Commands

Attributes

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

Example 1

dsplmistats 1.1

Description

Display LMI statistics for channel 1.1.1.1.

System Response

```
sw81           TN    SuperUser       BPX 15    8.2       Jan. 29 1996 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 10-27 dsplmistats Parameters

Parameter	Description
channel	Channel is specified in the following format *slot.port*

dspport

Displays one of three choices; the state of all ATM ports in a node, general information on all four ports on a selected ASI card, or detailed status on a single specified ATM port. The more specific the port address in the command, the more detail is provided. The following are examples of the **dspport** command:

- dspport displays states of all ATM ports in the node
- dspport 8 displays the port states for ASI in slot 8
- dspport 8.1 displays the configuration for port 1 of the ASI in slot 8

A full description of these parameters is provided in the **cnfport** command.

Full Name

Display port

Syntax

dspport [slot | slot.port]

Related Commands

cnfport, upport, dnport

Attributes

Privilege	1–2
Jobs	No
Log	No
Node	BPX
Lock	No

Example 1

dspport

Description

Display the port status of ASIs on the node.

System Response

```
a19           VT    SuperUser       BPX 15    8.2    Mar. 23 1996 18:52 GMT

ASI Port States
Port  State
4.1   ACTIVE









Last Command: dspport


Next Command:
```

Example 2

dspport 4

Description

Display the port statuses for the ASI in slot 4.

System Response

```
ca19           VT    SuperUser       BPX 15    8.2    Mar. 23 1996 18:53 GMT

Port configuration for ASI 4

Port   Chan        Speed      Interface       State       Protocol    Type
1      1        96000 (cps)   T3-2            ACTIVE      NONE        UNI









Last Command: dspport 4


Next Command:
```

Example 3

dspport 4.1

Description

Display the status of ASI port 4.1.

System Response

```
swstorm        TN    SuperUser       BPX 15    8.2    July 26 1996 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 10-28 dspport Optional Parameters

Parameter	Description
slot.port	Specifies the slot number and port to display.

dspportq

Displays the port queue configuration for an ASI card. If you enter this command without a parameter, the display shows a list of ports on all ASI cards and the status (Active/Standby) of each. If you enter only the slot, the display shows a list of ports, the speed of each, its interface type, and queue information. If you enter the slot and port number, the display shows the detailed information shown in the example figure.

Full Name

Display port queue configuration.

Syntax

dspportq [slot | slot.port]

Related Commands

cnfportq

Attributes

Privilege	1–2
Jobs	No
Log	No
Node	BPX
Lock	No

Example 1

dspportq 4.1

Description

Display the port queue configuration for 4.1.

System Response

```
swstorm        TN    SuperUser       BPX 15    8.2    July 26 1996 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   ABR Queue Depth:               0
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: dspportq 4.1


Next Command:
```

Table 10-29 dspportq Optional 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    8.2    Mar. 23 1996 18:55 GMT

Port Statistics for 4.1         Cleared: Mar. 23 1996 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 Ofl:         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 10-30 dspportstats Parameters

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

Table 10-31 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.

grpcon

Adds a connection to a group. Adding a connection to a group has two prerequisites:

- The connection must already exist on the node (see the **addcon** command).
- The connection group must already exist (see the **addcongrp** command).

No command exists to delete an individual connection from a group. Instead, the connection must be deleted (using **delcon**) then added again. The **grpcon** command can be used to add either a single connection or multiple connections. Using the optional *channel ... channel* parameter format, a range of 1 - 16 connections can be added to the group in one command. All connections in the group must be of the inter-node, non-bundled ATM type. They must also have the same endpoints, routing characteristics, and ForeSight enable status.

The first connection added to a group determines the routing characteristics of the entire group. All subsequent connections must match the first connection's characteristics of ownership, COS, routing state, routing restrictions, and ForeSight. Attempting to add a dissimilar connection results in an error message "mismatched connection/group" characteristic. For example, the ownership of both the connection group and the connection itself must be either local or remote. Non-connection parameters, such as fail state, loop state, and configuration, can be specified for an individual connection in the group after the connection has been added to the group.

Full Name

Group a connection

Syntax

grpcon <connection group> <channel> [channel... channel]

Related Commands

delcongrp, addcongrp, dspcongrps, dspcongrp

Attributes

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

Example 1

grpcon bpx6.1 9.1.100.100

Description

Establish a connection group to BPX6 for connection 9.1.100.100.

System Response

```
bpx1           TN    SuperUser       BPX 15    8.2       Feb. 14 1996 20:00 PST

 Local           Remote      Remote                              Route
 Channel         NodeName    Channel         State  Type         Avoid COS O
 9.1.100.100     bpx6        11.2.100.100    Ok     vbr                 0  L




This Command: grpcon bpx6.1 9.1.100.100


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

Table 10-32 grpcon Parameters

Parameter	Description
connection group	The name of the connection group that has been established on the local node.
channel	The local node channel to be added to the group in the format *slot.port.vpi.vci*.

Table 10-33 grpcon Optional Parameters

Parameter	Description
.chan ... chan	Specifies a contiguous range of up to 16 connections to add to the group at once.

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    8.2    Mar. 23 1996 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    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: upport 4.2


Next Command:
```

Table 10-34 upport Parameters

Parameter	Description
slot.port	Specifies slot number of the ASI card and the port to be activated.

CHAPTER

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 **dsptrkutl** 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 11-1 shows the full command name and starting page for each description.

Table 11-1 Bandwidth Management Commands

Command	Description	Page
cnfchutl	Configure channel utilization	11-3
cnfcos	Configure class of service	11-7
cnfpref	Configure preferences	11-9
dncon	Down connections	11-12
dspload	Display load	11-15
dspospace	Display open space for routes	11-18
dsprts	Display routes	11-20
dsptrkutl	Display trunk utilization	11-22
prtrts	Print routes	11-25
upcon	Up connections	11-27

cnfchutl

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

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

channel utilization x full load for the connection type

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

0.50 x 480 pps = 240 pps

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

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

Full Name

Configure channel utilization

Syntax

cnfchutl <channel(s)> <%_util>

Related Commands

dspchcnf

Attributes

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

Example 1

cnfchutl 5.1 40

Description

Set utilization on data channel 5.1 at 40%.

System Response

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

            Maximum EIA     %      DFM Pattern     DFM
Channels    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    8.2    Mar. 16 1996 10:10 PST

           %    Adaptive  Gain (dB)   Dial                          OnHk      Cond
Channels  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    8.2    Mar. 23 1996 10:45 PST

Frame Relay Channel Configuration Port: 8.1

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




Last Command: cnfchutl 8.1.100 60


Next Command:
```

Table 11-2 cnfchutl Parameters

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

cnfcos

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    8.2    Mar. 16 1996 10:12 PST

 Local      Remote      Remote                                      Route
 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 11-3 cnfcos Parameters

Parameter	Description
channels	Specifies the voice, data, frame relay, or Fast PAD voice/data channel(s), where *channel* is one of the following: • For voice connections: *slot.channel* • For data connections: *slot.port* • For frame relay connections: *slot.port.DLCI* • For FastPAD switched voice connections: *slot.port* • For FastPAD voice connections: *slot.port.subslot* • For FastPAD data connections: *slot.port.subslot.subport*
cos	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).

cnfpref

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

Related Commands

dsprts

Attributes

Privilege	1–2
Jobs	Yes
Log	Yes
Node	IPX, IGX
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    8.2    Mar. 16 1996 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    8.2    Mar. 23 1996 10:48 PST

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


Last Command: cnfpref * +


Next Command:
```

Table 11-4 cnfpref Parameters

Parameter	Description
channels	Specifies the channel, group, or range of channels for preferred route configuration. The channel specifier has one of the following formats: • slot.channel — voice connection. • slot.port — data connection. • slot.port.DLCI — frame relay connection. • remote node.groupname — frame relay connection group connection. • slot. port.subport — FastPAD voice connection. • slot.port.subslot.subport — FastPAD data connection A “*” specifies all locally owned connections and applies only to the “+” and “-”.
route	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 *alpha*, 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.

Table 11-5 cnfpref Optional Parameters

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

dncon

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

Connections can be downed immediately or with courtesy. Even with immediate downing, a prompt appears that requests confirmation. With courtesy downing, the system waits until the connection is onhook before downing the connection. Courtesy downing is possible only if the onhook status has been configured with the **cnfvchtp** command. Courtesy downing is not available for FastPAD connections because the 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 **dspcons** screen. Table 11-6 shows each item in the State column.

Table 11-6 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    8.2      Aug. 26 1996 16:51 GMT

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









This Command: dncon 3.1.100 i


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

Example 5

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 11-7 dncon Parameters

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

Table 11-8 dncon Optional Parameters

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

dspload

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

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

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

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

total trunk capacity = current load + open space + 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.

Full Name

Display connection loading

Syntax

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

Related Commands

dspplnutl

Attributes

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

Example 1

dspload

Description

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

System Response

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

Packet Line loads for node 'alpha'

        Units       Used        Available   Reserved    Cmax In Use Cmax In Use
PLN      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    8.2       Aug. 26 1996 17:05 GMT

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

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

Last Command: dspload 10


Next Command:
```

Table 11-9 dspload Optional Parameters

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

dspospace

Displays the open space for a connection route.

Full Name

Display open space for a route

Syntax

dspospace <connection | group>

Related Commands

Attributes

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

Example 1

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    8.2 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: dspospace 4.1.


Next Command:
```

Table 11-10 dspospace Parameters

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

dsprts

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

Full Name

Display connection routing

Syntax

dsprts [start group | chan] [nodename]

Related Commands

cnfpref

Attributes

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

Example 1

dsprts

Description

Display the connection routes.

System Response

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

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


Last Command: dsprts


Next Command:
```

Table 11-11 dsprts Optional Parameters

Parameter	Description
start group or channel	Specifies the starting group or channel with which to begin the display. Channel displays are in num order. If no starting channel is specified, the display begins with the first connected channel. Start cha is specified in one of the following formats: Voice connection: *slot.channel* Data connection: *slot.port* Frame relay connection: *slot.port.DLCI* Frame relay connection group: *remote node.groupname* Access device connection: *slot.port.device_ID* FastPad voice connection: *slot.port.subport* FastPAD data connection: s*lot.port.subslot.subport*
node name	Specifies that connections from only the local node to the current node are displayed. If no *nodenan* entered, connections from the local node to all other nodes are displayed.

dsptrkutl

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

Table 11-12 Trunk Utilization Parameters 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 x ("Total packets transmitted")/("Elapsed Time" x 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 x ("Total packets transmitted")/("Peak Interval" x bandwidth (in packets per second)).	
Last Interval (seconds)	Elapsed time, in seconds, for the last screen update interval.	
Interval packets generated	Number of packets transmitted during the last interval.	
Interval packet rate (pkts/sec)	Number of packets transmitted per second during the last interval.	
Interval utilization	Bandwidth used expressed as a percentage of the available bandwidth during the last interval. This is: 100 x (“Interval packets transmitted”)/(“Last Interval” x bandwidth (in packets per second)).	
Total Connections	Total number of connections routed over the trunk.	
Terminated/Via	Terminated:	Number of connections routed over the trunk that terminate at this node.
	Via:	Number of connections routed over the trunk that do not terminate at this node.

Table 11-13 Terminated Connection Statistics

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

dsptrkutl <trunk number> [interval]

Related Commands

dspload, dspchhist, dsptrkhist

Attributes

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

Example 1

dsptrkutl 5.3

Description

Display trunk utilization for port 3 of the BNI in slot 5.

System Response

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

TRK  5.3 Utilization Display

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


This Command: dsptrkutl 5.3


Hit DEL key to quit:
```

Table 11-14 dsptrkutl Parameters

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

Table 11-15 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 11-16 prtrts Optional Parameters

Parameter	Description	
start channel	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:	
	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 **dspcons** screen has the following meaning:

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

Full Name

Up a connection

Syntax

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

Related Commands

dncon, dspcon, dspcons

Attributes

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

Example 1

upcon 5.1

Description

Activate connections 5.1.

System Response

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

 Local      Remote      Remote                                      Route
 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
 9.1.200    gamma       8.1.300    Ok     fr                              0  L
 9.2.400    beta        19.2.302   Ok     fr(Grp)                         0  L
 14.1      )gamma       15.1       Ok     v                               0  L




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

Table 11-17 upcon Parameters

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

CHAPTER

Synchronizing Network Clocks

This chapter describes how to synchronize a network and the commands related to synchronization.

Understanding Network Sychronization

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

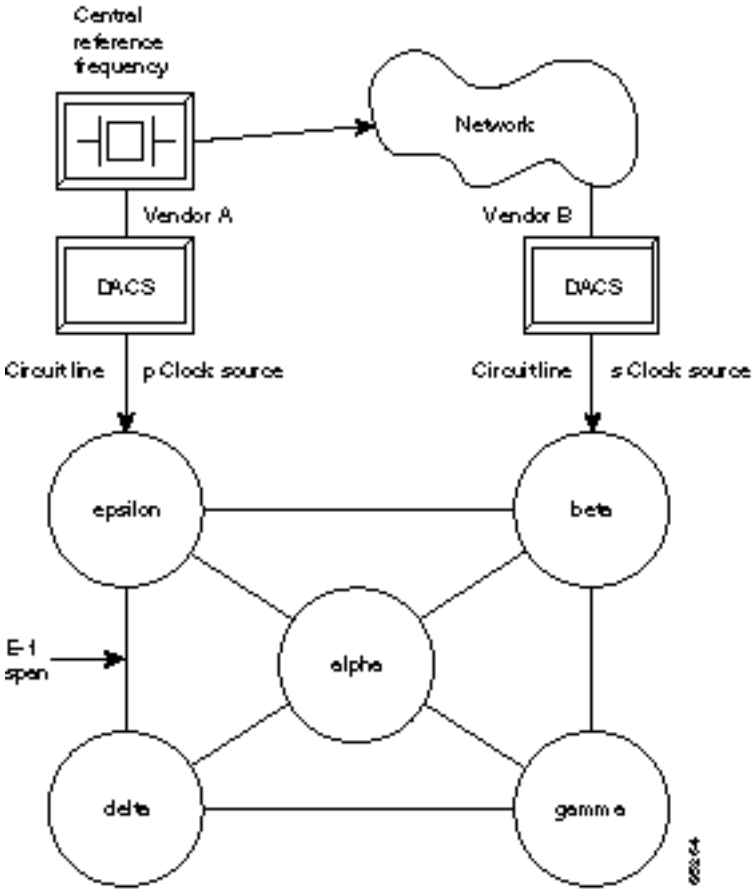
Ordinarily, a network's clock sources and line characteristics are configured as part of the node installation process. Thereafter, clock sources are redefined when a network is reconfigured or a line status is changed.

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 12-1 illustrates clock source reliability)
- Network configuration (topology, backbone, ring, star, mesh, and so on)
- Availability of multiple clock sources in a plesiochronous network

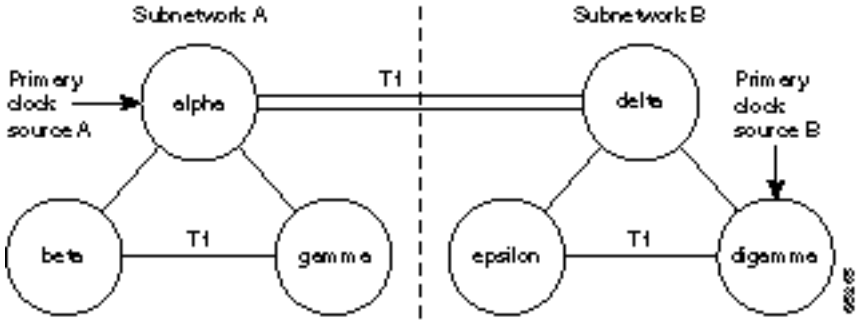
A plesiochronous network is a network in which there are two or more independent, active clock sources. For example, a network in which multiple vendors provide multiple lines that require clock mastership can be a plesiochronous network. The following depicts clock source reliability.

Figure 12-1 Clock Provided by Vendor



In this example of a network, vendor A provides the most reliable clock source.

Figure 12-2 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, since the distance in hops (as opposed to 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 Can either specify or remove a primary, secondary, or tertiary clock source in a network.

dspclksrcs Displays all the currently defined clock sources.

dspcurclk Displays the current clock source being used by the network.

clrclkalm Clears an alarm associated with a clock source. The cause of an alarm usually is a current clock source that fails or is outside of frequency limits. You must clear a clock source alarm before that clock source is usable.

Summary of Commands

Table 12-1 shows the name and starting page for the description of synchronization commands.

Table 12-1 Commands for Clock Synchronization

Command	Description	Page
clrclkalm	Clear clock alarm	12-4
cnfclksrc	Configure clock source	12-5
dspclksrcs	Display clock source	12-7
dspcurclk	Display current clock	12-9

clrclkalm

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 **clrclkalm**. The system displays no messages after execution.

Full Name

Clear clock alarm

Syntax

clrclkalm <line type> <line number>

Related Commands

cnfclksrc, dspclksrcs, dspclns, dspcurclk, dsptrks

Attributes

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

Example 1

clrclkalm c 12

Description

Clear a clock alarm on circuit line 12.

Example 2

clrclkalm p 12

Description

Clear clock alarm on trunk 12.

Table 12-2 clrclkalm 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    8.2    Mar. 15 1996 15:31 MST

                            Network Clock Sources

Primary
bootzilla CLN   15

Secondary
None

Tertiary
None




Last Command: cnfclksrc c 15 p


Next Command:
```

Table 12-3 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 12-4 cnfclksrc Optional Parameters

Parameter	Description
freq	Specifies the frequency of the clock source. An entry is necessary only if the *line type* 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

cnfclksrc, dspcurclk

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    8.2    Mar. 15 1996 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 control card.
- 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

cnfclksrc, dspclksrcs

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    8.2    Mar. 15 1996 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 Structured Networks

This chapter describes the commands that relate to domains and structured networks. It also contains basic guidance for setting up a structured network. The functions of the commands in this chapter are to:

- Configure domains and junction nodes
- Delete nodes
- Display nodes, a junction network, domain alarm status, and network routes
- Print a information about a junction network

A structured network is divided into two or more domains. A domain is a group of regular nodes and a single *junction node*. A junction node provides communication from one domain to another domain. Connections cannot originate on a junction node.

Setting Up a Domain

Setting up a domain requires specification of a junction node and identification of the domains and the nodes in each domain.

Step 1 Use the **cnfjct** command to establish a junction node in a domain. This command execute at the junction node before any trunks are added from the junction node to other nodes in the domain.

Step 2 Establish the other nodes in the domain by using the trunk commands to add trunks from the junction node to other nodes in the domain. See Chapter 4 for trunk commands. Not every node in the domain needs to connect directly to the junction node. Other trunks may exist from one non-junction node to another non-junction node in the domain.

Step 3 Use the **cnfdmn** command to give the domain an identifying number. The **cnfdmn** command can execute at any node within the domain.

Step 4 After setting up the domains, add trunks between the junction nodes in the domains.

Summary of Commands

Table 13-1 shows the full name and starting page for the description of each command that is specific to structured networks.

Table 13-1 Commands for Managing a Structured Network

Command	Description	Page
cnfdmn	Configure domain	13-3
cnfjct	Configure junction node	13-4
dspdmns	Display domain alarm status	13-5
dspjctnw	Display junction network	13-7
dspnds	Display all nodes	13-9
dspnwrt	Display network route	13-11
prtjctnw	Print junction network	13-13

cnfdmn

Assigns a domain number to a node. You can execute **cnfdmn** at any node in a domain. Use **cnfdmn** before trunks are added to other nodes in the domain. The domain name includes the domain number (*d*1, *d*2, *d*3, and so on). The *domain* name precedes the *node* name. A period separates the domain name and node name when packet lines are eventually added to other nodes. The following command sequence is typical for configuring a junction node:

- **cnfjct** y
- **cnfname** alpha
- **cnfdmn** 1

The **cnfjct** command configures the node as a junction node. The **cnfname** command is optional: it assigns a new name to the junction node. The display shows the domain name and node names after the trunks are added from the junction node to the other nodes in the domain. In the current example, the junction node name "alpha" subsequently appears as "D1.alpha."

Full Name

Configure a domain number

Syntax

cnfdmn <*domain number*>

Related Commands

cnfjct, cnfname

Attributes

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

Example 1

cnfdmn 1

Description

Assign domain number 1 to a node.

Table 13-2 cnfdmn Parameters

Parameter	Description
domain number	Specifies a number for a domain. The range is 1–8.

cnfjct

Specifies a node as a junction node. This command can also delete junction node specification.

Full Name

Configure junction node

Syntax

cnfjct <Y/N>

Related Commands

cnfdmn, cnfname

Attributes

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

Example 1

cnfjct y

Description

Create a junction node.

Example 2

cnfjct n

Description

Delete a junction node.

Table 13-3 cnfjct Parameters

Parameter	Description
Y/N	Specifies whether junction node status is added to or deleted from a node. “Y” indicates that the node is a junction node. “N” indicates that the node is not a junction node.

dspdmns

Displays the alarm state of all domains in a structured network. Execute **dspdmns** at any node in a structured network. The display shows only whether the alarm is major or minor. The **dspnds** command indicates nodes with alarms. To investigate alarm conditions on a remote node, use the **vt** command to start a virtual terminal session on the node. Use the **dspalms** command to get information on the alarm conditions at the node. The screen display is dynamic, so clearing an alarm after this command is entered changes the screen display.

Full Name

Display domain alarm status

Syntax

dspdmns

Related Commands

dspnds, dspalms, dspcons

Attributes

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

Example 1

dspdmns

Description

Display the alarm status of domains in a structured network.

System Response

```
D3.delta TRM   YourID:1        IPX 16    8.2    Mar. 23 1996 09:55 PST


Domain   Alarm   Junction Nodes
1                alpha   zeta
2                beta    phaser
3        Minor   delta   jammer
4                gamma   telsa
5
6
7
8




Last Command: dspdmns



Next Command:
```

dspjctnw

Displays the interconnection of junction nodes. The **dspjctnw** command can execute at only a junction node. The information consists of the trunk numbers that connect all the junction nodes. For each trunk, the two entries that appear are “from-to” and “to-from.”

Full Name

Display junction network

Syntax

dspjctnw [+b | -b] [+z | -z]

Related Commands

dspnw, prtjctnw

Attributes

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

Example 1

dspjctnw

Description

Display junction network information. The system response in this example is an over-simplified, two-junction network with only one trunk.

System Response

```
D1.alpha          TRM   YourID:1        IPX 16    8.2    Mar. 23 1996 09:55 PST

Junction  Alarm      Trunk    Trunk    Trunk
D2.beta   10-9/D1.alpha
alpha     9-10/D2.beta




Last Command: dspjctnw



Next Command:
```

Table 13-4 dspjctnw Parameters

Parameter	Description
+b	Specifies that only lines that support bursty data are displayed.
-b	Specifies that only lines that do not support bursty data are displayed.
+z	Specifies that only lines that use ZCS encoding are displayed.
-z	Specifies that only lines that do not use ZCS encoding are displayed.

dspnds

Displays the name, type, and alarm status of all nodes within the domain of the node executing the command. The nodes are grouped by domain, with one domain per display. The remote node alarm status is provided on a per-domain basis. Therefore, a virtual terminal session (**vt**) on the remote node is necessary to obtain specific alarm information. If a node is in alarm, its name is highlighted, and the alarm type (major/minor) is displayed. A junction node is identified by the word "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 domain.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 23 1996 09:42 PST

NodeName Alarm
alpha    MAJOR
beta     MAJOR
gamma    MAJOR




Last Command: dspnds


Next Command:
```

Table 13-5 dspnds Optional Parameters

Parameter	Description
domain number	Specifies the domain number (1–8). Only the nodes within the specified domain are displayed.

dspnwrt

Displays the end-to-end network route for a connection or group of connections. Enter the **dspnwrt** command at an end point of the connection. The display screen shows a snapshot of the present route for the connection. If a re-route occurs soon after the information appear, the new route does not appear until **dspnwrt** is again entered.

Full Name

Display network route

Syntax

dspnwrt <*connection number*>

Related Commands

dspnw, addcongrp, grpcon

Attributes

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

Example 1

dspnwrt 6.1

Description

Display a network route. The example response illustrates a simplified structured network with a single connection.

System Response

```
D1.alpha          TRM   YourID:1        IPX 16    8.2    Mar. 23 1996 09:55 PST

Network Route for 6.1Snapshot

Domain
Local=alpha10-- 7beta


Junction:D1.beta9--10D2.gamma


Remote:gamma9-- 8delta




Last Command: dspnwrt 6.1



Next Command:
```

The system response is based on the following network topology:

The **dspnwrt** command must be entered at node D1.alpha or D2.delta (the end points of the connection).

Table 13-6 dspnwrt Optional Parameters

Parameter	Description
connection number	Specifies the connection end point.

prtjctnw

Prints the interconnection of junction nodes. Enter the **prtjctnw** command at only a junction node. The information consists of the trunk numbers interconnecting all junction nodes. For each trunk, the two entries have the form “from-to” and “to-from.” The **prtjctnw** command uses the same syntax and prints the same information as the **dspjctnw** command.

Full Name

Print junction network

Syntax

prtjctnw [+b | -b] [+z | -z]

Related Commands

dspnw, dspjctnw

Attributes

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

Table 13-7 prtjctnw Optional Parameters

Parameter	Description
+b	Specifies that only lines that support bursty data are displayed.
-b	Specifies that only lines that do not support bursty data are displayed.
+z	Specifies that only lines that use ZCS encoding are displayed.
-z	Specifies that only lines that do not use ZCS encoding are displayed.

CHAPTER

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. Upon new job creation, 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 prompt is for the units. The choices are *days*, *hours*, and *minutes*. The system subsequently prompts for a number of these units.

Command (required): without a command specification, the **addjob** command terminates, so this is how you exit **addjob**. After each command and its parameters, the system prompts 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 job editing. 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 specification for a parameter, 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.
- For deleting 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 the 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.
- The template on the screen prompts for a line type ("p" for packet line, "c" for circuit line, or "d" for a T3 (DS3) line).
- The template on the screen prompts for the slot number of the line on which an alarm triggers the job.
- In the case of a trigger on a DS3 line, specify the East ("e") or West ("w"). For example, "w f" specifies a trigger on the West line occurring on a failure.
- The prompt requests you to specify whether the trigger should occur on the failure ("f") or repair ("r") of a line.
- The prompt requests you to specify whether the trigger occurs on an "up" or a "down" condition for the EIA lead status. The "up" condition indicates that the system should allocate bandwidth from other connections to enable data transfer. The "down" condition indicates that the system should release bandwidth to other connections because the connection does not require the bandwidth for data transfer. The applicable cards are the SDP, LPD, HDM, and LDM.

Summary of Commands

Table 14-1 shows the full command name and starting page for the description of each job command.

Table 14-1 List of Job Commands

Mnemonic	Description	Page
addjob	Add job	14-5
addjobtrig	Add job trigger	14-8
deljob	Delete job	14-10
deljobtrig	Delete job trigger	14-12
dspjob	Display job	14-14
dspjobs	Display jobs	14-16
editjob	Edit job	14-18
prtjob	Print job	14-18
prtjobs	Print jobs	14-21
runjob	Run job	14-22
stopjob	Stop job	14-24

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 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    8.1    Mar. 16 1996 14:15 PST

                                   Job 1   test
Last Execution Results: None                     Status: Idle
Next Execution Time: 03/17/96 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 March 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 the Return key without entering a command.

Table 14-2 addjob Parameters

Parameter	Description
command	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. 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.
failure reaction	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: **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 14-3 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 *seconds* 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 circuit line, trunk, or T3 (DS3). A line acquires “failed” status when an alarm condition is invoked. A “repair” of a line occurs when the alarms on the line are removed. Jobs can be triggered upon either a failure or repair of a line.

The command also configures a job to allocate or release bandwidth from other connections. This bandwidth decision depends on whether the EIA lead status is “up” or “down.”

Full Name

Add a job trigger

Syntax

addjobtrig <job_number> <line_type> <line_specifier> <pass/fail> <up/down>

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    8.1    Mar. 16 1996 14:22 PST

Job   Description       Next Execution      Status     Interval    Access Group
1     test              03/17/96 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 upon repair of circuit line 14.

Table 14-4 addjobtrig Parameters

Parameter	Description
job number	Specifies the number of the job to trigger.
line type	Specifies the type of line. A “p” indicates a trunk (TRK) or packet line. A “c” indicates a circuit line (CLN). A “d” indicates a DS3 line.
line specifier	Specifies the slot number for TRK and CLN lines, or the slot number and DS3 indicator (E or W) for DS3 lines.
fail/repair	Specifies whether the trigger occurs on the failure or repair of the line.
up/down	Specifies the EIA lead state of the trigger. The state is either “up” or “down.” The cards to which this can apply are the SDP, HDM, LDM, and LPD.

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    8.1       Sep. 3 1996  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 14-5 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    8.1    Sep. 3 1996  18:19 GMT

Job   Description       Next Execution      Status     Interval    Access Group
1     test1                                 Idle                   SuperUser
      Trigger 1 -  PLN     2             FAILURE
2                                           Idle                   SuperUser
3     test3             12/12/96 11:11:11   Idle       1 days      SuperUser
4                                           Idle                   SuperUser
5                                           Idle                   SuperUser
6                                           Idle                   SuperUser




This Command: deljobtrig 1


Enter trigger number:
```

Table 14-6 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    8.1    Mar. 16 1996 14:17 PST

                                   Job 1   test
Last Execution Results: None                    Status: Idle
Next Execution Time: 03/17/96 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 14-7 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    8.1    Mar. 16 1996 14:16 PST

Job   Description       Next Execution      Status     Interval    Access Group
1     test              03/17/96 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 March 17, 1996 at 11:00:, for example, enter:

1996 3 17 11 00

If no other items need changing, press the Return key.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.1    Mar. 16 1996 14:19 PST

Job 1 prtlog
Last Execution Results: None                    Status: Editing
Next Execution Time: 03/17/96 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 14-8 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.

```
alpha          TRM   YourID:1        IPX 16    8.1    Mar. 16 1996 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 14-9 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    8.1    Mar. 16 1996 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)?
```

Managing the Network

This chapter tells you how to use the network administration commands. Examples of the tasks that 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 password prompt "Enter Password." For security, the system does not echo the password to the screen. For initial sign-on, enter the password that the system administrator provides. Later, you can change the password with the **cnfpwd** command.

After you sign on, the system prompts for the next command. The system is now ready for you to enter commands.

Signing Off the System

When you have completed a session and want to sign off, use the **bye** command. This 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 connection and establishes a local connection. To end the local connection, enter the **bye** command again.

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 Timezone for each node. The **cnfdate** command lets you set both time and date. The **cnftime** command lets you set.

Summary of Commands

Table 15-1 shows the full name and starting page for the description of each network management command.

Table 15-1 Commands for Managing a Network

Command	Description	Page
adduser	Add user(s)	15-4
cnfdate	Configure date	15-6
cnfpwd	Configure password	15-8
cnfsnmp	Configure SNMP parameters	15-9
cnfstatmast	Configure statistics master SV+ address	15-10
cnfsysparm	Configure system parameters	15-11
cnftime	Configure time	15-15
deluser	Delete user	15-17
dspnwip	Display network IP interface	15-19
dsppwd	Display password	15-20
dspsnmp	Display SNMP parameters	15-22
dspsnmpstats	Display SNMP statistics	15-24
dspusers	Display users	15-26
dspusertask	Display user task	15-27
dspusertasks	Display all user tasks	15-29

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    8.2    Mar. 16 1996 13:48 PST

YourID       1
Sarah        5









Last Command: adduser Sarah 5


Next Command:
```

Table 15-2 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.

cnfdate

Sets 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 **cnftmzn**.) For the first-time configuration of the date and time in a new network, **cnftdate** requires all the parameters except for [sec]. The default for [sec] is 0. If a date and time already exist in the network, the defaults are the existing values at the moment you enter the **cnftdate** command. Note that changes to date and time alter the timestamps on StrataView 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 1996 12 16 13 54 11

Description

Set the time to 1:54:11 in the afternoon, August 16 1996. 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    8.2    Aug. 16 1996 13:54 PST

YourID       1
Sarah        5




Last Command: cnfdate 1996 12 16 13 54 11

Warning: Changing time of day affects StrataView statistics timestamps
Next Command:
```

Table 15-3 cnfdate Parameters

Parameter	Description
year	Specifies whether the clock source is a trunk (p), a circuit line (c), or an external source (e).
month	Specifies the month. The range is 1 - 12.
day	Specifies the day. The range depends on the month and can be 0 - 31.
hour	Specifies the hours. The range is 0 - 23. For example, enter 6 AM as 6 and 6 PM as 18.
min	Specifies the minute of the hour. The range is 0 - 59. The default is 0.

Table 15-4 cnfdate Optional Parameters

Parameter	Description
sec	Specifies the seconds. Pressing Return without specifying a number is acceptable. The range is 0 -59. The default is 0.

cnfpwd

Changes the password associated with a UserID. To change a password, you must log into the node with the UserID 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 of 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 15-5 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.

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 15-6 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 StrataView Plus 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 15-7 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 the system (network-wide) parameters.

Note Using **cnfsysparm** requires caution because network rerouting or loss of data may result from changes in system parameters. If necessary, consult with the Cisco TAC before you use this command.

The following paragraphs describe the user-configurable system parameters. The table that follows this list shows the system parameters, their default values, and their ranges. The numbers in the following paragraphs are the index numbers in the table.

- 1: Maximum Time Stamped Packet Age (msecs) - Time stamped packets older than this value are discarded. Conflicting values (when networks are joined) are resolved to the LOWER value. Range = 1–60 (msec). Default = 40 (msec).
- 2: Fail connections on communication break - If 'Yes', connections are conditioned if the node at the other end of the connection becomes unreachable. Conflicting values are resolved to 'Yes'. Default = No
- 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 that route. The delay is given in milliseconds with a range of 1 to 255 msec. Only multiples of 1 msec are valid. Conflicting values (when networks are joined) are resolved to the lower value.
- 8–12: Maximum Network Delay for UVM, CDP, or CVM to UVM, CDP, or CVM compressed voice and high-speed data connections. When the total queueing delay on a route exceeds this value, connection traffic cannot use that route. The delay is given in milliseconds with a range of 1 to 255 msec. Only multiples of 1 msec are valid. Conflicting values (when networks are joined) are resolved to the higher value.
- 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 the ForeSight feature is enabled.
- 14: Using Frame Relay standard parameters allows you to substitute Bc for VC Q depth and Be for PIR when you configure frame relay ports and connections. Displays for frame relay ports and connections reflect the choice. Note that, if you change this parameter, a network-wide reset to the default values takes place for all frame relay classes, and the system displays a warning that it has done so.
- 15–20: Maximum Local Delay for InterDom(ain) UVM, CDP, or CVM to UVM, CDP, or CVM connections is similar to parameters 8–12 described above. These parameters are used to set the maximum delay at the local domain in structured networks. These delays can be set only on a domain by domain basis, not end to end.

This command sets system parameter values for all nodes in the network. Network-wide parameters are configurable only when all nodes in the network are reachable. Be aware of the consequences of the resolution of conflicting values when networks are joined. Table 15-8 lists the system parameters, their default values, and their ranges. The summary, examples, and parameter summary then follows.

Table 15-8 Defaults and Ranges of cnfsysparm Parameters

System Parameters			
Index	**System-Wide Parameter**	**Default**	**Range**
1	Max Time Stamped Packet Age (msec)	40	1–60
2	Fail Connections On Communication Break	No	Y/N
3	Max Network Delay for 'v" connections (msec)	14	1–255
4	Max Network Delay for 'c' connections (msec)	27	1–64
5	Max Network Delay for 'd' connections (msec)	14	1–255
6	Max Network Delay for 'a' connections (msec)	27	1–255
7	Max Network Delay for High Speed Data connections (msec)	40	1 -255
8	Max Network Delay for CDP or CVM to CDP or CVM “v'’ connections (msec)	64	1–255
9	Max Network Delay for CDP or CVM to CDP or CVM “c” connections (msec)	64	1–64
10	Max Network Delay for CDP or CVM to CDP or CVM “t & p” connections (msec)	64	1–255
11	Max Network Delay for CDP or CVM to CDP or CVM “a” connections (msec)	64	1–255
12	Max Network Delay for CDP or CVM to CDP or CVM High Speed Data connections (msec)	64	1–255
13	Enable Discard Eligibility (DE)	No	Y/N
14	Use Frame Relay standard parameters Bc and Be	No	Y/N
15	Max Local Delay for Interdom CDP or CVM to CDP or CVM “v'’ connections (msec)	27	1–255
16	Max Local Delay for Interdom CDP or CVM to CDP or CVM “c” connections (msec)	27	1–64
17	Max Local Delay for Interdom CDP or CVM to CDP or CVM “t & p” connections (msec)	27	1–255
18	Max Local Delay for Interdom CDP or CVM to CDP or CVM “a” connections (msec)	27	1–255
19	Max Local Delay for Interdom CDP or CVM to CDP or CVM High Speed Data connections	27	1–255
20	Max Local Delay for Interdom High Speed Data connections (msec)	28	1–255
21	FastPAD De-jitter Buffer Depth		

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.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 16 1996 13:58 PST

                          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)........   40
8  Max Network Delay for CDP-CDP 'v' connections (msec)............   64
9  Max Network Delay for CDP-CDP 'c' connections (msec)............   64
10 Max Network Delay for CDP-CDP 't' & 'p' connections (msec).....   64
11 Max Network Delay for CDP-CDP 'a' connections (msec)...........    64


This Command: cnfsysparm


Continue?
```

System Response

In response to the prompt “Continue” at the bottom of the display enter a “y” or press return to display the second screen.

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 16 1996 13:59 PST

                            System-Wide Parameters

12 Max Network Delay for CDP-CDP High Speed Data connections (msec)...   64
13 Enable Discard Eligibility.....................................   No
14 Use Frame Relay Standard Parameters Bc and Be...................   No
15 Max Local Delay for Interdom CDP-CDP 'v' conns (msec)...........   27
16 Max Local Delay for Interdom CDP-CDP 'c' conns (msec)...........   27
17 Max Local Delay for Interdom CDP-CDP 't' & 'p' conns (msec)....   27
18 Max Local Delay for Interdom CDP-CDP 'a' conns (msec)...........   27
19 Max Local Delay for Interdom CDP-CDP High Speed Data conns (msec)..   27
20 Max Local Delay for Interdom High Speed Data conns (msec).......   28




This Command: cnfsysparm


Which parameter do you wish to change:
```

When the following prompt appears on the screen:

Which parameter do you wish to change:

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 msecs to 42 msecs, enter:

1 42

When you configure this parameter, the second screen does not change. However, 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 15-9 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 the table that precedes the command summary.

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    8.2       Sep. 5 1996  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 15-10 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.

deluser

Deletes a user from the network. You can delete any user that has a privilege level that is lower than the current 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    8.2    Mar. 16 1996 13:52 PST

YourID       1
Sarah        5




Last Command: deluser John


Next Command:
```

Table 15-11 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    8.2       Sep. 5 1996  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    8.2    Mar. 16 1996 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 15-12 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.

```
sw91           TN    SuperUser       IPX 8     8.2       May  29 1996 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: dspsnmp


Next Command:
```

dspsnmpstats

Displays the following SNMP statistics for the node:

- SVC Requests Received, the number of SVC request 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.

```
sw91           TN    SuperUser       IPX 8     8.2       May  29 1996 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 step 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    8.2      Jan. 31 1996 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 step 2

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    8.2      Jan. 31 1996 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 15-13 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    8.2       Aug. 14 1996 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   < You
 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:
```

CHAPTER 16

Troubleshooting

Table 16-1 lists the troubleshooting commands.

Table 16-1 Troubleshooting Command List

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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    8.2      Mar.  3 1996 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:
```

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 **dspcons** 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, dspcons

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    8.2    Mar. 16 1996 12:53 PST

 Local      Remote      Remote                                      Route
 Channel    NodeName    Channel    State  Type    Compression  Code Avoid COS O
 N5.1       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: addextlp 5.1 n


Next Command:
```

Table 16-2 addextlp Parameters

Parameter	Description
channel	Specifies the channel to loopback in the format *slot.port*.
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.

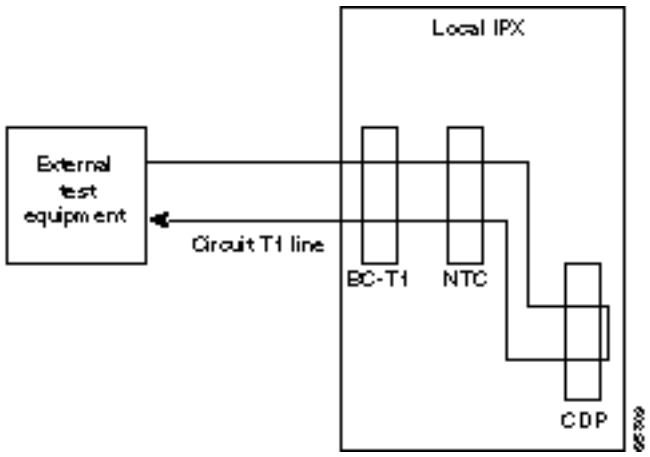
addloclp

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

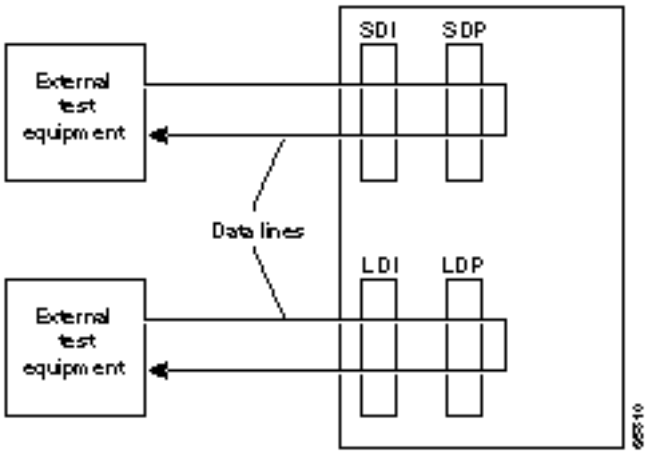
For voice connections, **addloclp** creates a signal path from a channel or group of channels on an incoming line then back out to the line. External test equipment can test the integrity of the path at the T1 DS0 level. Figure 16-1 shows a local loopback on a voice channel.

Figure 16-1 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 16-2 illustrates a local loopback on a data connection.

Figure 16-2 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 **dspcons** 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

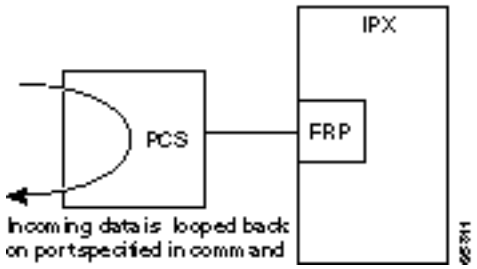
In frame relay connection loopback mode (DLCI included in command), all packets from the far-end of the connection are dropped. The far-end system software is informed of the loopback. In port loopback mode (port specified without a DLCI), all packets for this port are dropped and each opposite end is 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:

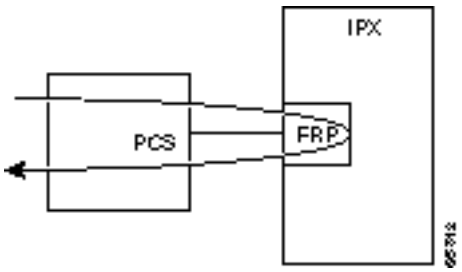
Figure 16-3 Local Loop on Port Concentrator



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 16-4 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, dspfrport

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    8.2    Mar. 23 1996 11:03 PST

 Local      Remote      Remote                                      Route
 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
 9.1.200    gamma       8.1.300    Ok     fr                              0  L
 9.2.400    beta        19.2.302   Ok     fr(Grp)                         0  L
 14.1      )gamma       15.1       Ok     v                               0  L









Last Command: addloclp 14.1


Next Command:
```

Table 16-3 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 16-4 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 16-5 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 16-6 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 16-7 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

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       8.2    July 13 1996 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 16-8 addlocrmtlp Parameters

Parameter	Description
channels(s)	The connection endpoint on the local node.

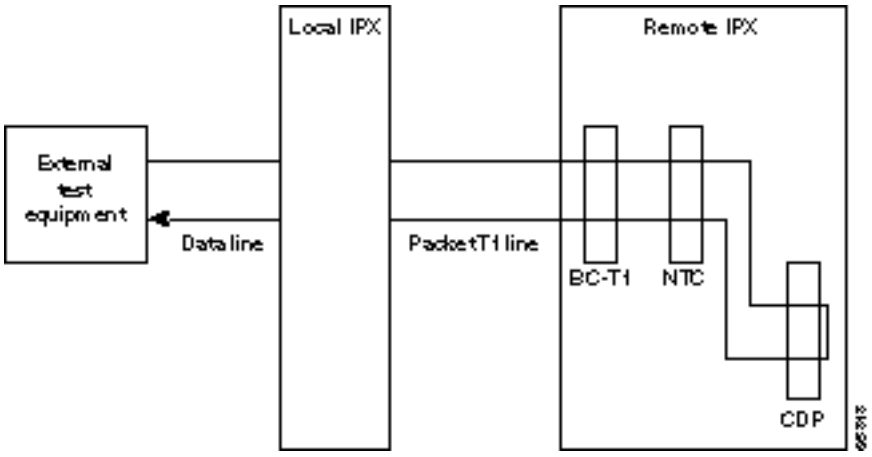
addrmtlp

The **addrmtlp** command places the following types of channels in remote loopback mode:

- Voice
- Data
- Frame relay port
- Frame relay connection
- ATM connection

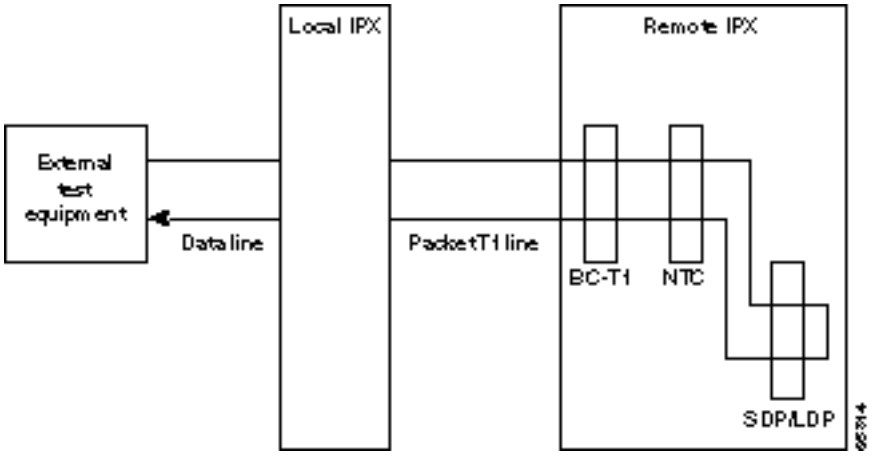
For voice connections, **addrmtlp** loops the information stream from the designated channel or group of channels on an incoming circuit line across the network and loops it back to the circuit line by way of the remote CDP or CVM. External test equipment can then test the integrity of the path at the T1 DS0 level. The following illustrates a remote loopback on a voice channel.

Figure 16-5 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 16-6 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 **dspcons** 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."

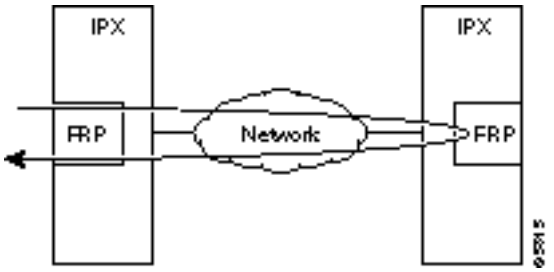
Because the addrmtlp command causes the connection to be removed from service, loopbacks should be used only when a service disruption can be tolerated. Local loopbacks are established with the **addloclp** command. Both local and remote loopbacks are removed by the **dellp** command. Loopbacks for data 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.

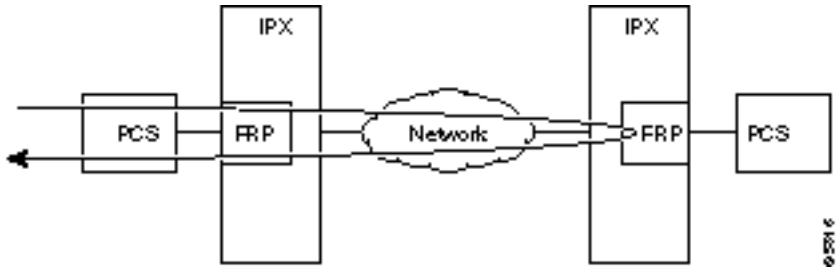
Figure 16-7 Frame Relay Remote Loops



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 16-8 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    8.2    Mar. 16 1996 12:57 PST

 Local      Remote      Remote                                      Route
 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: addrmtlp 5.1

Next Command:
```

Table 16-9 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 16-10 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 16-11 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 16-12 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.

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 9.2.40.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 16 1996 13:24 PST

Channel Statistics for 9.2.400    Cleared: Mar. 16 1996 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 16-13 clrchstats Parameters

Parameter	Description
channel	Specifies the frame relay channel in the format *slot.port.DLCI*. 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

cnfclksrc, 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 16-14 clrclkalm 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    8.2    Mar. 16 1996 13:10 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: clrclnalm 14 2


Continue?
```

Table 16-15 clrclnalm Parameters

Parameter	Description
line number	Specifies the number of the line.
failure type	Specifies the type of alarm to clear.

clrclnerrs

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 clear only those alarms that the collection of statistical data has caused. Alarms caused by a network failure cannot be cleared by **clrclnalm**.

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    8.2    Mar. 16 1996 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:
```

clrclnalm

Clears the alarms associated with a circuit line. Since the statistical alarms associated with a 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

Note **clrclnalm** and **clrlnalm** are the same commands.

Syntax

clrclnalm <line_number> <fail_type>

Related Commands

dsplns, dsplnerrs

Attributes

Privilege	1–5
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

clrlnalm 14 2

Description

Clear the minor alarm caused by frame slips on 14. The 2 indicates frame slips.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 16 1996 13:10 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: clrclnalm 14 2


Continue?
```

Table 16-16 clrclnalm Parameters

Parameter	Description
line number	Specifies the number of the line.
failure type	Specifies the type of alarm to clear.

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    8.2       Sep. 12 1996 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)?
```

clrlnerrs

Clears accumulated line error counts for all lines on a node.

Full Name

Clear line errors

Syntax

clrlnerrs [<line_number>]

Related Commands

dsplnerrs, prtlnerrs

Attributes

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

Example 1

clrlnerrs

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    8.2    Mar. 16 1996 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:
```

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    8.2       Sep. 12 1996 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
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    8.2    Mar. 23 1996 10:59 PST



Last Command: clrmsgalm

No message alarm set
Next Command:
```

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    8.2   Mar. 23 1996 10:57 PST

Port Statistics for 9.1         Cleared: Mar. 11 1996 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 Dropd         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

dspslotalms

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	BPX
Lock	Yes

Example 1

clrslotalms 3

Description

Clear alarm on slot 3.

Table 16-17 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 16-18 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

```
beta           TRM   YourID:1        IPX 32    8.2    Mar. 15 1996 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


Next Command:
```

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    8.2    Mar. 15 1996 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 16-19 clrtrkalm 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*.
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

clrtkerrs *

Description

Clear all trunk errors.

System Response

```
pubsbpx1       TN    SuperUser       BPX 15    8.2       Sep. 12 1996 19:37 PST

Total Errors

      Code    Rx Cell Out of  Loss of Frame   HCS     Tx Cell Cell    Cell
TRK   Errors  Dropped Frames  Signal  BitErrs Errors  Dropped Errors  Oofs
 1.1       0       0       0       0       -       0       0       -       -
 1.2       0       0       0       0       -       0       0       -       -




This Command: clrtrkerrs *


Clears errors on all trunks. Continue (y/n)?
```

Table 16-20 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 **dsptrkstats** to observe the trunk statistics. See the **dsptrkstats** command for a description of the counters cleared by the **clrtrkstats** command.

Full Name

Clear trunk statistics

Syntax

clrtrkstats <*trunk number*>

Related Commands

dsptrkstats

Attributes

Privilege	1–5
Jobs	Yes
Log	Yes
Node	BPX
Lock	Yes

Example 1

clrtrkstats

Description

Clear the statistics on trunk 3.

Table 16-21 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 IPX 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>

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    8.2       Sep. 12 1996 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 16-22 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.

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 16-23 describes the parameters for **cnflnalm**. For each *failure type* listed in Table 16-23, the *alarm classes*, the possible *error rate* options, and default *alarm times* and *clear times* are listed in Table 16-24. Table 16-25 describes the *error rate* options listed in Table 16-24.

Full Name

Configure line alarms

Syntax

cnflnalm <fail_type> <alarm_class> <rate> <alarm_time> <clear_time>

Related Commands

clrclnalm, clrtrkalm, dspclnerrs, dsplnalmcnf, dsptrkerrs

Attributes

Privilege	1–3
Jobs	No
Log	Yes
Node	IPX, IGX
Lock	Yes

Example 1

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    8.2        Aug. 20 1996 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: cnflnalm 27 1 4 4 3


Next Command:
```

Table 16-23 cnflnalm Parameters

Parameter	Description
Failure type	Specifies the failure type. The list that follows gives the number for each failure type. (Items with an asterisk pertain to ATM only.) **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	Specifies the class of alarm to be configured for the specified alarm type. Valid alarm classes are: • Minor alarm • Major alarm
rates	Specifies the error rate at which the error must occur before an alarm is declared. The choices for error rates vary depending on the *failure type* and the *alarm class*. 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 16-24 for failure type and Table 16-25 for error rate options.

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 16-24 Failure Type Parameters

Failure Type	Alarm Class	Error Rate Options *	Alarm Time	Clear Time
1–Bpv	1–minor 2- major	Option B Default = 4 Default = 2	10 Minutes 10 Seconds	3 Minutes 10 Seconds
2–Fs	1–minor 2–major	Option A Default = 3 Default = 2	10 Minutes 10 Seconds	3 Minutes 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 2–major	Any dropped packet rate from 1% to 10%	5 Minutes 60 Seconds	3 Minutes 10 Seconds
5- Tspd	1–minor 2–major	Option A Default = 3 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
6–Ntspd	1–minor 2–major	Option A Default = 3 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
7- Pkterr	1–minor 2–major	Any error count from 1–10,000	10 Minutes 125 Seconds	3 Minutes 10 Seconds
8-Los	1–minor 2–major	Option A Default = 5 Default = 3	10 Minutes 10 Seconds	3 Minutes 10 Seconds
9- Fer	1–minor 2–major	Option A Default = 3 Default = 2	10 Minutes 200 Seconds	3 Minutes 10 Seconds
10- CRC	1–minor 2–major	Option A Default = 3 Default = 2	10 Minutes 200 Seconds	3 Minutes 10 Seconds
11–Pkoof	1–minor 2–major	Option A Default = 3 Default = 2	10 Minutes 200 Seconds	3 Minutes 10 Seconds

Failure Type	Alarm Class	Error Rate Options *	Alarm Time	Clear Time
12- Oom	1–minor 2–major	Option A Default = 4 Default = 2	10 Minutes 10 Seconds	3 Minutes 10 Seconds
13- Ais16	1–minor 2–major	Option A Default = 5 Default = 3	10 Minutes 10 Seconds	3 Minutes 10 Seconds
14–Bdapd	1–minor 2–major	Option A Default = 4 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
15- Bdbpd	1–minor 2–major	Option A Default = 4 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
16–Badclk	1–minor 2–major	Option A Default = 2 Default = 1	10 Minutes 50 Seconds	3 Minutes 10 Seconds
17–Pccpd	1–minor 2–major	Option A Default = 4 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
18–Lcv	1–minor 2–major	Option B Default = 3 Default = 1	10 Minutes 10 Seconds	3 Minutes 10 Seconds
19–Pcv1	1–minor 2–major	Option B Default = 3 Default = 1	10 Minutes 10 Seconds	3 Minutes 10 Seconds
20–Pcvp	1–minor 2–major	Option B Default = 3 Default = 1	10 Minutes 10 Seconds	3 Minutes 10 Seconds
21–Bcv	1–minor 2–major	Option B Default = 3 Default = 1	10 Minutes 10 Seconds	3 Minutes 10 Seconds
22–Rxvpd	1–minor 2–major	1–10% Default =1% 1–10% Default = 4%	5 Minutes 60 Seconds	3 Minutes 10 Seconds
23–Rxtspd	1–minor 2–major	Option A Default = 3 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
24–Rxbdapd	1–minor 2–major	Option A Default = 3 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
25–Rxbdbpd	1–minor 2–major	Option A Default = 4 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
26–Rxntspd	1–minor 2–major	Option A Default = 4 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds
27–Rxhppd	1–minor 2–major	Option A Default = 4 Default = 2	5 Minutes 60 Seconds	3 Minutes 10 Seconds

Failure Type	Alarm Class	Error Rate Options *	Alarm Time	Clear Time
		Option A		
28–Atmhec	1–minor	Default = 4	10 Minute	3 Minutes
	2–major	Default = 2	120 Seconds	10 Seconds
		Option A		
29–Plcpoof	1–minor	Default = 4	10 Minutes	3 Minutes
	2–major	Default = 2	200 Seconds	10 Seconds
		Option A		
30–Rxspdm	1–minor	Default = 4	4 Minutes	2 Minutes
	2–major	Default = 2	10 Seconds	5 Seconds

Table 16-25 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

dspslotalms

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    8.2 Sep. 12 1996 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    8.2       Sep. 12 1996 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) Bfrm         .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, dsptrks

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    8.2    Mar. 16 1996 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 16-26 cnftrkalm Parameters

Parameter	Description
e | d	Enable or disable trunk alarms.

dellp

Deletes an external, local, remote, or local-remote (tiered nets) loopback form 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 indicates loopback.) The display prompts you to confirm deletion of the loopback. To confirm, enter “y.”

System Response

```
pubsipx1       TN    SuperUser       IPX 16    8.2.00    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 16-27 dellp Parameters

Parameter	Description
channels	Specifies the channel or set of channels. The format for *channel* depends on the type of connection, as follows: Voice connection: *slot.channel* Data connection: *slot.port* Frame relay connection: *slot.port.DLCI* ATM connections: *slot.port.vpi.vci* Access device: *slot.port.connection_ID*

dncd

Downs (or deactivates) a card. When you down a card, it is no longer available as a node resource.

A card should be downed before you remove it from a card cage. Before an active card is downed, 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 the command, 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). To switch a control between active and standby, use the **switchcc** command.

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 16-28 dncd Parameters

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

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.
- The number of remote domain alarms 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 Port Communication Failed (OAM Packet Threshold exceeded).
- FR NNI A-bit Alarms (connections with A bits = 0).
- 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 16-29 shows the display commands that shows error information.

Table 16-29 Commands That Display Error Information

Command	Description
dspcds	Displays cards in the node, with "F" for failures.
dspclns	Displays circuit lines.
dspcons	Displays connections.
dspdmns	Displays the domain and node alarms in the network.
dsplog	Displays events affecting the node.
dspnds	Displays unreachable nodes within domains.
dspnw	Displays alarm status of each domain in network.
dsptrks	Displays trunks.
dsppwr	Displays power supply status and internal temperature.

Full Name

Display current node alarms

Syntax

dspalms

Related Commands

dspcds, 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

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 23 1996 10:50 PST

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:       2 Majors
Remote Domain Alarms:     None









Last Command: dspalms


Next Command:
```

Example 2

dspalms

Description

The current alarms on a BPX.

System Response

```
sw53           TN    SuperUser       BPX 15    8.2     July 21 1996 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
Remote Domain Alarms:     None

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    8.2    Mar. 23 1996 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    8.2    Mar. 23 1996 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                         RTS   C    On
 DSR   E    Off                         DTR   H    On
 DCD   F    Off                         LT    L    Off
 (TM)  n    Off                         (RLB) N    Off




This Command: dspbob 9.1


Hit DEL key to quit:
```

Table 16-30 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 16-31 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 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 *System Manual* information for the PCS.

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 16-32 shows the possible status displays and their meaning.

Table 16-32 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 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, for example Statistical Reserve for PCC traffic. Pooled bandwidth is available and can be assigned to any use but primarily will be 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 16-33 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
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    8.2    Mar. 16 1996 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:
```

dspclnerrs

Displays the accumulated error count since the last time errors were reset. Table 16-34 lists the types of circuit line errors. The **clrclnerrs** command clears the error counters for circuit lines.

Note The **dsplnerrs** and **dspclnerrs** commands are the same.

Table 16-34 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

dspclnerrs [slot | slot.line]

Related Commands

clrclnerrs, prtclnerrs

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

```
sw151          TN    SuperUser       IGX 16    8.2       June 20 1996 12:45 GMT

Total Errors

      Code    Frame   Out of  Loss of Frame   CRC     Out of
CLN   Errors  Slips   Frames  Signal  BitErrs Errors  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    8.2       June 20 1996 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 16-35 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    8.2    Jan. 24 1996 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    8.2    Apr. 4 1996  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 16-36 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”. Specific events are logged only within a domain. Events occurring in other domains are not reported at all.

Full Name

Display event log

Syntax

dsplog

Related Commands

clrogs

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    8.2    Mar. 16 1996 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 **cnflnalm** command. See the **cnflnalm** command for descriptions of these parameters.

Full Name

Display line alarm configuration

Syntax

dsplnalmcnf

Related Commands

cnflnalm, dspclnerrs, dsptrkerrs

Attributes

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

Example 1

dsplnalmcnf

Description

View the line alarm threshold configurable for a node. Multiple responses follow.

System Responses

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 23 1996 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    8.2    Mar. 23 1996 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) Ais16    .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    8.2    Mar. 23 1996 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    8.2    Mar. 23 1996 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) Atmhec      .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 16-37 lists the error types displayed. The **clrlnerrs** command clears the error counters for circuit lines by resetting all error counts to 0.

Table 16-37 Line Error Types

Type	Explanation
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.

Full Name

Display line errors

Syntax

dsplnerrs [line_number]

Related Commands

clrclnerrs, prtclnerrs

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 16-38 dsplnerrs Optional Parameters

Parameter	Description
line number	Specifies the circuit for the error count display. Otherwise, a summary screen for all lines appears.

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.

System Response

```
pubsipx1       TN    SuperUser       IPX 16    8.2    Nov. 8 1996  04:24 PDT

         Power Supply Status                                Cabinet Temperature

Monitor      Status          Revision                          26        78
Installed    Active             FP
                                                           C  60  |  |  140  F
                                                           e      |  |       a
   Power Supply Type   +5v   +12v  -12v  -48v  Temp        n  50  |--|  122  h
                                                           t      |  |       r
A  Empty                                                   i  40  |  |  104  e
B  Empty                                                   g      |  |       n
C  AC 400W IPX         Ok    Ok    Ok          Ok          r  30  |  |  86   h
D  AC 400W IPX         Ok    Ok    Ok          Ok          a      |  |       e
                                                           d  20  |  |  68   i
                                                           e      `--'       t


Last Command: dsppwr


Next Command:
```

Example 2

dsppwr

Description

Display the power status and temperature inside the current IGX node.

System Response

```
sw151          TN    SuperUser       IGX 16    8.2       Aug. 23 1996 11:50 GMT

Power Supply Status                                      Cabinet Temperature

Monitor Rev AK, Ser # 247582  -  Status: Active             30        86

   AC Supply    Status                                   C  60  |  |  140  F
A  1  875W      OK                                       e      |  |       a
B  1  875W      OK                                       n  50  |--|  122  h
C  1  Empty                                              t      |  |       r
D  2  Empty                                              i  40  |  |  104  e
E  2  Empty                                              g      |  |       n
F  2  Empty                                              r  30  |  |  86   h
                                                         a      |  |       e
                                                         d  20  |  |  68   i
                                                         e      `--'       t


Last Command: dsppwr


Next Command:
```

Example 3

dsppwr

Description

Display the power status and temperature inside the current BPX node.

System Response

```
bootzilla TN    SuperUser       BPX 15    8.2       May  17 1996 11:06 GMT

         Power Status                                      Cabinet Temperature

ASM Status: Active                                            21        69

Power voltage A/B:      0 / 49 V                          C  60  |  |  140  F
                                                          e      |  |       a
PSU  Ins Type Rev SerNum Failure                          n  50  |--|  122  h
 A    N  N/A  N/A   N/A    N/A                            t      |  |       r
 B    Y  ????  00 ......  None                            i  40  |  |  104  e
                                                          g      |  |       n
            Fan Status                                    r  30  |  |  86   h
                                                          a      |  |       e
     FAN   1    2    3                                    d  20  |  |  68   i
         0000 3300 3240 RPM                               e      `--'       t


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 node.

System Response

```
D1.jea          TRM   SuperUser       BPX 15    8.2    Mar. 30 1996 12:04 GMT

                              Slot Alarm Configuration

                         Minor                                Major

  Violation    Rate    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 16-39 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. It displays a single line for each slot in a local BPX node occupied by a card. Both the card type and current card alarm status is listed. If a card is operating normally, a “Clear - Slot OK” is displayed. If fault conditions persist to cause the slot errors (described in the Display Slot Errors command) to exceed a preset threshold, this will be displayed under column labeled Current Card Alarm Status. The clrslotalms command clears these alarm messages if the alarm condition has retired.

Full Name

Display slot alarms

Syntax

dspslotalms

Related Commands

dspsloterrs

Attributes

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

Example 1

dsplotalms 1

Description

Display the status of the card in slot 1.

System Response

```
D1.jea          TRM   SuperUser       BPX 15    8.2    Mar. 30 1996 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 16-40 dspslotalms Parameters

Parameter	Description
slot number	Specifies the slot number of the card to be displayed.

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 16-41 describes the errors is the display.

Table 16-41 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

```
pubsbpx1       TN    SuperUser       BPX 15    8.2 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    8.2 Aug. 6 1997  18:01 PDT

                        Summary of Slot Errors

           Invld Poll  Poll        Tx    Rx          B-    Rx
     Stdby Rx    A Bus B Bus Bad   BIP-  BIP-  SIU   Frame FIFO  Poll  CK-
     PRBS  Port  Par   Par   Grant 16    16    Phase Par   Sync  Clk   192
Slot Errs  Errs  Errs  Errs  Errs  Errs  Errs  Errs  Errs  Errs  Errs  Errs
1       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
7       0     0     0     0     0     0     0     0     0     0     0     0




Last Command: dspsloterrs


Next Command:
```

Table 16-42 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

```
D1.jea         TRM   SuperUser       BPX 15    8.2    Mar. 30 1996 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:
```

dsptrkerrs

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 clrtrkerrs command resets all error counts to 0. Table 16-43 contains a brief description of each error.

Table 16-43 Description of the Errors in the dsptrkerrs 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.
	Loss of signal	Number of times the signal level at the trunk line input went below the minimum acceptable level.
Only ATM	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

dsptrkerrs [slot | slot.port]
or
dsptrkerrs <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

dsptrkerrs

Description

Display a summary of all trunk errors at the local node.

System Response

```
alpha          TRM   YourID:1        IPX 16    8.2    Mar. 16 1996 13:13 PST

Total Errors

      Code    Rx Pkts Out of  Loss of Frame   CRC     Tx Pkts Packet  Packet
PLN   Errors  Dropped Frames  Signal  BitErrs Errors  Dropped Errors  Oofs
10          -       -       0       0       0       0       0       0       1
14          0       0       0       -       0       -    218M       0       -









Last Command: dsptrkerrs


Next Command:
```

Example 2

dsptrkerrs 16

Description

Display a detailed description of the errors for trunk 16.

System Response

```
D2.ipx4        TRM   YourID:1        IPX 16    8.2    Aug. 4 1996  16:34 PST

Packet Line 16  Status: Clear - Line OK                Clrd: Date/Time Not Set
Type              Count ETS   Status    Type              Count ETS   Status
Bipolar Err             0       0       Comm Fails       0        -
Out of Frms             0       0       Loss of Sig(RED) 1        -
Loss of Sig             0       0       AIS        (BLU) 0        -
Frame BitErrs           0       0       Out of Frms(RED) 0        -
Tx Voice Pkt Drp        0       0       Rmt Oof    (YEL) 0        -
Tx TS Pkt Drp           0       0       Packet Oofs(RED) 1        -
Tx Non-TS Pkt Drp       0       0       Rmt Alarms (YEL) 0        -
Tx NPC Pkt Drp          0       0
Tx Bdata A Pkt Drp      0       0
Tx Bdata B Pkt Drp      0       0
Packet Err              4       1
Packet Oofs             0       0


Last Command: dsptrkerrs 16


Next Command:
```

Table 16-44 dsptrkerrs 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 *slot.port*. For all physical trunk types, the trunk number is optional: entering **dsptrkerrs** without a trunk number lists all trunks with errors. For standard trunks, the form of a specific trunk is *slot* for single-trunk cards or *slot.port* 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 **dspclnerrs** command. The **clrclnerrs** 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.

prtlnerrs

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 line errors

Syntax

prtlnerrs

Related Commands

dsplnerrs

Attributes

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

Example 1

prtlnerrs

Description

Print errors for all upped lines on a node.

System Response

None available as command produces hardcopy.

prttrkerrs

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 **dsptrkerrs** command. See the **dsptrkerrs** command for output information.

Full Name

Print trunk errors

Syntax

prttrkerrs

Related Commands

dsptrkerrs

Attributes

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

Example 1

prttrkerrs

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 16-45 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.

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 16-46 resetpc Parameters

Parameter	Description
slot.port	Specifies the card and port number to be reset.

switchcc

Switches the standby BCC or NPC (or NPM) card to active and the active card to standby. If a standby BCC is not available, the command is not executed. If a standby BCC is available but not ready to go active, a prompt asks you to confirm or abort the switch. 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 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.

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 control card to standby and the standby control card to active.

System Response

The node does not display a screen for the operation.

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 16-47 describes the results of **tstcon** execution.

Table 16-47 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 16-48 describes examples of the **tstcon** command with various arguments. Table 16-49 and Table 16-50 describe the required parameters and optional parameters in these examples.

Table 16-48 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

testcon <channel(s)> [-nolp] [type] [failure abort] [repeat count]

Related Commands

dspcons, dspcons

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    8.2    Mar. 23 1996 11:04 PST

 Local      Remote      Remote                                        Route
 Channel    NodeName    Channel    State  Type    Compression  Code Avoid COS O
 5.1 T      beta       )25.1       Ok     256                 7/8         0  L
 9.1.100    gamma       8.1.200    Ok     fr                              0  L
 9.1.200    gamma       8.1.300    Ok     fr                              0  L
 9.2.400    beta        19.2.302   Ok     fr(Grp)                         0  L
 14.1       gamma       15.1       Ok     v                               0  L




Last Command: tstcon 9.1.100

Tests: Completed = 1, Aborted = 0, Failed = 1, Connections Repaired = 0
Next Command:
```

Table 16-49 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 16-50 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 inserting OAM segment loopback cells. The connection service is affected for only a few seconds while the data path is under test. To minimize this disruption, each channel is tested individually. This means only one connection at a time is removed from service. Because service is disrupted for only a short time, no conditioning is applied during the test.

The **tstconseg** command can also test the connection to an IPX node 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 16-51 describes the reported results of **tstconseg** execution.

Table 16-51 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, dspcons

Attributes

Privilege	2
Jobs	Yes
Log	Yes
Node	BPX
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    8.2    Aug. 16 1996 12:37 PST

 Local           Remote      Remote                              Route
 Channel         NodeName    Channel         State  Type         Avoid COS O
 11.2.10.17      nmsbpx23    11.1.11.17      Ok     atfst




This Command: tstconseg 11.2.10.17 1


Perform a tstconseg on this connection (y/n)?

----------------

nmsbpx23       TN    SuperUser       BPX 15    8.2    Aug. 16 1996 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 16-52 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 16-53 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 that has been configured as an interface shelf (IPX/AF) 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, dspcons

Attributes

Privilege	1–2
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    8.2    Mar. 23 1996 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                    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: 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

```
bpx1           TN    SuperUser       BPX 15    8.2       Jan. 31 1996 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


bpx1          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 16-54 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 16-55 tstfdelay 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.
repeat count	Specifies the number of times the test is to be repeated. The range is from 1 to 50. If no test count is specified, the test is run 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 16-56 tstpcs Parameters

Parameter	Description
slot.port	*Slot* is the location of an FRM-2 or FRP-2 card. *Port* selects the physical port to which one of the Port Concentrator modules is connected. 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 **dspfrport** 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 **dspfrport**. 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, dspfrport

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    8.2    Mar. 23 1996 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.

Table 16-57 tstport Parameters

Parameter	Description
slot	Specifies the slot number of the FRP, FRM, LDP, LDM, HDM, or SDP.
port	Specifies the number of the port to test. The range is 1–4.

Table 16-58 tstport Optional Parameters

Parameter	Description
n/f	Specifies that an external loopback test should run at the near or far-end modem. An “n” specifies a "near-end" test. An “f” specifies a "far-end" test. Without one of these optional parameters, the test runs internally.

CHAPTER 17

Access Device Commands on a Node

This chapter describes the commands that apply specifically to the Cisco 3800 series of access devices. 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 (such as the Cisco 3810).

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 on-line in the 8.2 *FastPAD User s Guide* in the section 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 17-1 shows the name and starting page for the description of each command.

Table 17-1 Access Device Commands

Mnemonic	Description	Page
addad	Add access device	17-3
addcon	Add connection‘	17-5
cnfadcmtmr	Configure access device congestion management timer	17-7
cnfadcon	Configure access device connection (bandwidth) parameters	17-9
delad	Delete access device	17-12
dspads	Display (all) access devices	17-14
dspcon	Display a connection	17-16
dspcons	Display connections	17-18
resetad	Reset access device	17-21
restartad	Restart access device protocol handshake	17-22

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    8.2 Mar. 28 1997 08:19 GMT
                        Access Devices Information
 Slot.Port  Name       ID  DLCI  Type                          Alarm IP Address
   12.1                 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 17-2 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 17-3 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:

- 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 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.

FTM/FTC to FTM/FTC:

addcon <slot.port.connection_ID> <remote node> <slot.port.connection_ID>

FTM/FTC to FRM/FRP:

addcon <slot.port.connection_ID> <remote node> <slot.port.DLCI>

CVM/CDP to FTM/FTC:

addcon <slot.port> <remote node> <slot.port.connection_ID> [compression algorithm]

Related Commands

dspads

Attributes

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

Example 1

addcon 4.3.31 sw25 4.1.31

Description

Add a local connection from 4.3.31 to 4.1.31.

System Response

```
sw25           TN    SuperUser       IPX 8     8.2 May  26 1997 00:26 GMT

 From           Remote      Remote
 4.3.31         NodeName    Channel         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 4.3.31 sw25 4.1.31 session


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

Table 17-4 addcon Parameters

Parameter	Description
slot.port	Specifies the slot and port number of the trunk to add.
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 17-5 addcon Optional Parameters

Parameter	Description
compression algorithm	The optional compression algorithm can be one of the following: • a16 • a24 • a32l16

cnfadcmtmr

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

cnfadcmtmr <slot.port> <Cong. Mgmt. Timer>

Related Commands

addad, dspads

Attributes

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

Example 1

cnfadcmtmr 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     8.2 Apr. 1 1997  11:17 GMT


   FrontCard  BackCard
   Type  Rev  Type     Rev  Status
1  NPC   BFF                Active
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: cnfadcmtmr 4.3


Enter Cong Mgmt. Timer (0=Disabld or 40-350 in 10ms units): 350
```

Table 17-6 cnfadcmtmr 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     8.2 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                              FPC:   OK
          Access Device: OK                      Access Device: OK

Last Command: cnfadcon 4.2.100 76.8/76.8


Next Command:
```

Table 17-7 cnfadcon Parameters

Parameter	Description
slot.port	Specifies the slot and port on an FTC/ FTM for an access device connection.
bw_parameters	The bandwidth parameters are as follows: • **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 *Bc* shows.) or **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: 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. (An alternative specification for this parameter is possible, as the description of *Be* shows.) 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 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. 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    8.2 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 17-8 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
- 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, cnfadcmtmr

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     8.2 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     8.2 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                              FPC:   OK
          Access Device: OK                      Access Device: OK

Last Command: dspcon 4.1.33


Next Command:
```

Table 17-9 dspcon Parameters

Parameter	Description
channel	Specifies the channel in the format *slot.port.connection_ID*. The range for *connection_ID* 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 17-10 shows the fields displayed in the **dspcons** screens.

Table 17-10 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: • 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.
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

dspcons

Description

Display a summary of all connections.

System Response

```
sw25           TN    SuperUser       IPX 8     8.2 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: dspcons


Next Command:
```

Table 17-11 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 *slot.channel*.The start channel on a UVM is *slot.line.channel*.
node name	Specifies that only connections to this remote node from the local note 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>

Related Commands

restartad, dspads

Attributes

Privilege	1–3
Jobs	Yes
Log	Yes
Node	IPX, IGX
Lock	Yes

delad Parameters

Parameter	Description
slot.port	Specifies the slot and port number that connects to the access device.

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>

Related Commands

resetad, dspads

Attributes

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

restartad Parameters

Parameter	Description
slot.port	Specifies the slot and port number.

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 18-1). 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 18-2). 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 18-1 FastPAD Connection Configurations except Frame Relay

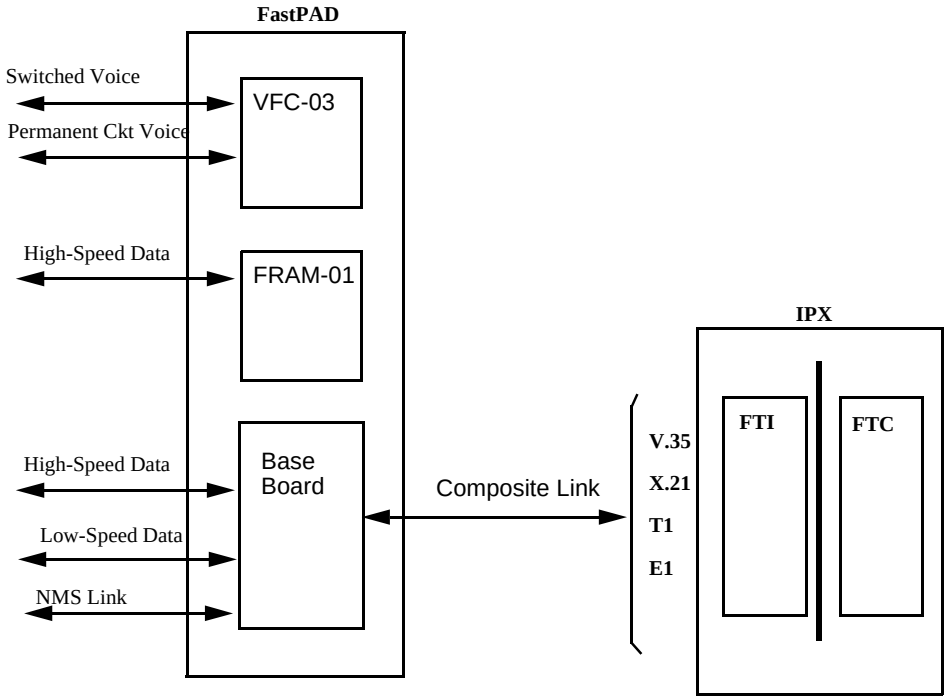
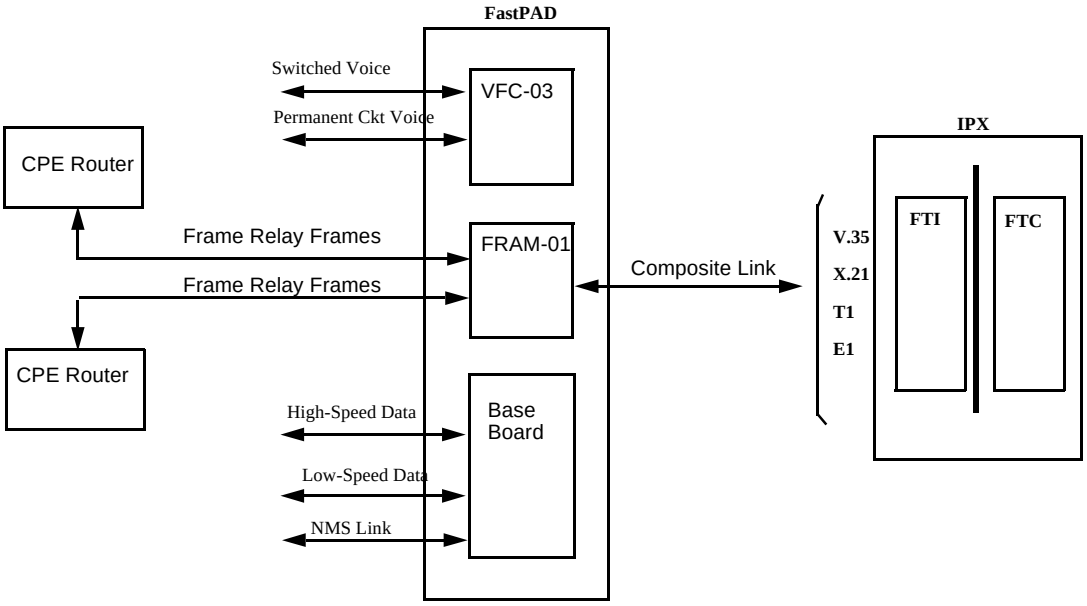


Figure 18-2 FastPAD Connection Configurations including Frame Relay



Configuration Summary

In setting up FastPAD connections across a network, a number of tasks need to be perfomed. 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 **cnfftcport** 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 **cnfclksrc**.

Unassigned Channel Signaling

Unassigned channel signals are transmitted on a channel which is not mapped to a logical port. Data code values 0x7F and 0x54 apply to the T1 and E1 channels. Signalling values 1111 and 1101 apply to T1/E1 ABCD signaling channels.

IPX and FastPAD Control Setup

The FastPAD can be monitored and managed by the IPX 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 node. With this command, specify the slot and port of the FTC 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 FTC card and FastPAD Link

This section describes the steps for setting up the FTC card and FastPAD link.

1 Activating the FTC port providing the link to the FastPAD.

The ports on the FTC 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 port with the **cnfftcport** command. If the port is not up, use the **upftcport** command to up it. For release 8.1, the **cnfftcport** command is modified to include the DE threshold. 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)

```
cnfftcport 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:

```
cnfftcport  FTC_slot.port   txq_depth  ecnq_depth  DE Threshold
            updt_prot_id
```

3 Linking the FastPAD to the IPX. Once an FTC port has been configured, the FastPAD can be linked to the IPX using the **addfp** command:

```
addfp FTC_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 Once communications have been established between the 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 **dspfp** 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 **cnffpport** 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 **cnffpport** 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**, **dspfrport**, **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
```

```
dnpfrport  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.

cnfvfpchtp Configures the FastPAD voice channel interface type. This command configures the telecommunications interface type.

2 Use the **addcon** command.

Setting Up FastPAD CELP8K or CELP 4.8K Voice Connections

Rel. 8.1 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 **cnffrcls** 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 **cnffrcls** command to set up a class of frame relay bandwidth parameters applicable to these connections. See also **dspfrcls**.

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. 8.1, 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 8.1, 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 18-3).

Table 18-1 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.

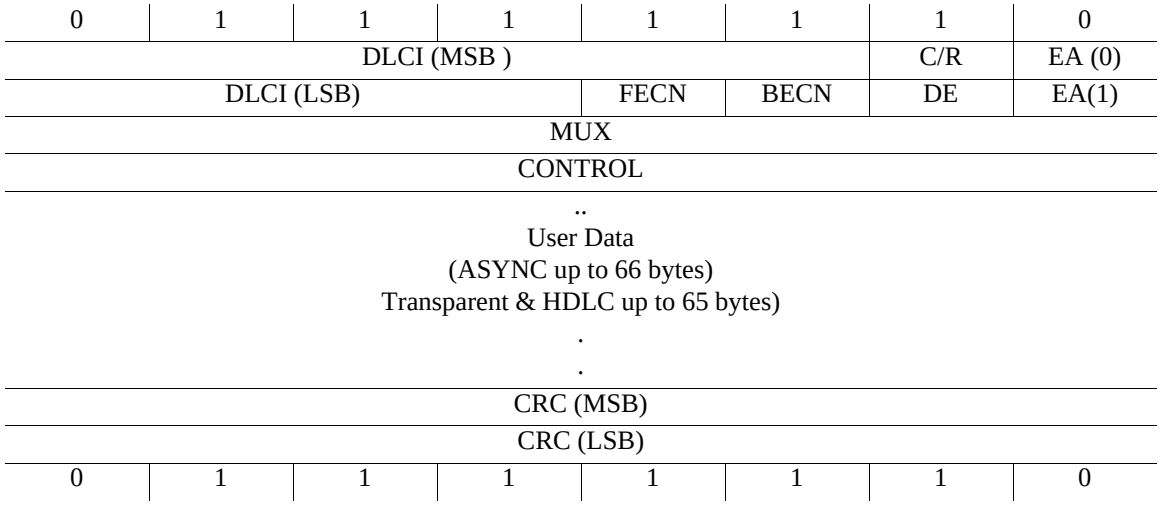
Data Frame Format

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 18-3. 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 18-3 FastPAD Frame Format



Summary of Commands

The commands discussed in the previous sections are summarized in the Table 18-2. The command name, a description, and the page on which more information can be found is included.

Table 18-2 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 in the *Command Reference*.
addrmtlp	Add remote loop. See the "Troubleshooting" chapter in the *Command Reference*.
cnfchgn	Configure Gain Insertion for Channel(s)
cnfchpri	Configure FRP channel priority for a connection, supporting SNA applications
cnfchutl	Configure channel utilization for a channel. See the "Optimize Traffic Routing" chapter in the *Command Reference*.
cnfcondsc	Configure Connection Descriptor.
cnfcos	Configure class of service. Sets priority for rerouting a connection. See the "Optimize Traffic Routing" chapter in the *Command Reference*.
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 in the *Command Reference*.
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 in the *Command Reference*.
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
dspcon	Display Connection
dspcons	Display Connections

Mnemonic	Description
dspfp	Display FastPAD Card Information
dspfps	Display Information for All FastPADs
dspfrcls	Display frame class parameters for FastPAD to FastPAD or FastPAD to FRP frame relay connections via FRAM-01 card.
dspfrport	Display Frame Port configuration on FastPAD FRAM-01.
dspftcport	Display FTC Port Configuration
dspict	Display Interface Control Template
dsprts	Displays routes used by connections at a node. See the "Optimize Traffic Routing" chapter in the *Command Reference*.
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 in the *Command Reference*.
tstdelay	Test round trip delay. See the "Troubleshooting" chapter in the *Command Reference*.
tstport	Test Port, executing port loopback test. See the "Troubleshooting" chapter in the *Command Reference*.
upcon	Up a connection that has been downed. See the "Optimize Traffic Routing" chapter in the *Command Reference*.
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 node FTC_slot.port type [BW] [%utl]
	where BW = MIR
Auto-Dial Voice:	addcon FTC_slot.port.FP_slot node FTC_slot.port.FP_slot type
Data:	addcon FTC_slot.port.FP_slot.port 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, upcon

Attributes

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

Example 1

addcon 31.1.8 IPX 31.2.8 atc12

Description

Add a voice connection from FastPad port 31.1.8 to 31.2.3 with ATC12 compression. When prompted, type “y” to add the connection.

System Response

```
IPX            TRM   SuperUser       IPX 32    8.1     Date/Time Not Set

 Local      Remote      Remote                                      Route
 Channel    NodeName    Channel    State  Type    Compression  Code 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 atc12

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

Table 18-3 addcon Parameters

Parameter	Description
local channel	Specifies the local frame relay channel to connect in the following format: 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 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.
node	Specifies the name of the IPX node at the other end of the connection.
remote channel	Specifies the remote FastPAD channel or destination channel of the connection. It is specified in the same format as: 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
type	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: 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 18-4 addcon Optional Parameters

Parameter	Description
avoid	Specifies the type of trunk for the connection to avoid. The default is no avoidance. The choices 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.
bandwidth	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
hop count bumping	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.
utilization	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: 8.1.X          Mar 1 1995        PST

From            Rem        Rem
                NodeName   Channel         State    Type  Compression Code  COS

10.1.3.3.990   beta       11.1.1.2.991  Downed   fr                      10
11.1.100        beta       11.1.2.2.200   OK       fr                      3
12.1.1.3        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    8.1     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 18-5 addfp Parameters

Parameter	Description
slot	Specifies the slot containing the FTC card to which the FastPAD is to be added.
port	Specifies the port number on the FTC card to which the FastPAD is to be added.
name	Specifies the name of the FastPAD to be added to the node. This name must be unique to the local (physically connected IPX) node.
id	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.
source dlci	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 18-6 addfpdial Parameters

Parameter	Description
channel	Specifies the FastPAD channel to get a speed dial number
dial number	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. The following lists the error/warning messages from this command.

Table 18-7

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, cnfftcport, 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    8.1.x    Mar. 15 1995 17:28 CST

Port configuration for FTC 21

From                    Chan     Speed    Interface   State
1                       9-15     448      FRI T1      INACTIVE




Last Command: addftcport 21.9-15


Next Command:
```

Table 18-8 addftcport Parameters

Parameter	Description
line.channel	Specifies the FTI T1/E1 line number and the logical port number. e.g. addfrport 8.14 (a period separates the line from the logical port number).

Table 18-9 addftcport Optional Parameters

Parameter	Description
- chan	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.
rate	Specifies the rate of a single logical port. By default, multiple ports are all 64 Kbps. A single DSØ/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    8.1     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: cnfchgn 31.1.8 -4 2

Next Command:
```

Table 18-10 cngchgn Parameters

Parameter	Description
channel(s)	Specifies the FastPAD channel
gain	Specifies the gain, in decibels, to assign to the channel. The range is -8 dB to +6 dB.

cnfcondsc

Assigns a reference description to a connection. The connection descriptor is configured independently at each end of a connection**.** The connection descriptor cannot be deleted in a job, only reconfigured. The **dspcon** and **dspcons +d** commands display the connection descriptor, if one is configured.

Full Name

Configure connection description

Syntax

cnfcondsc parameters

Related Commands

dspcon, dspcons

Attributes

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

Example 1

cnfcondsc 31.2.B.2 Maximillian’s_fax

Description

Give a descriptive name to channel 31.2.B.2. In this example, the name "Maximillian's_fax" is given to the connection 31.2.B.2. If a descriptor is desired for the other end of the connection, the user can "**vt**" to the other end of the connection and use the **cnfcondsc** command on that connection. The same name can be assigned or a different name.

System Response

```
IPX            TRM   SuperUser       IPX 32    8.1     Date/Time Not Set

Conn:  31.2.B.2   IPX         31.1.B.1    16         Desc: Maximillian's_fax


                                                              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: cnfcondsc 31.2.B.2 Maximillian's_fax

Next Command:
```

Table 18-11 cnfcondsc Parameters

Parameter	Description
channel	Specifies the FastPAD channel to configure.
descriptor	Specifies a string of up to 20 displayable characters starting with anything except a digit. No spaces are allowed.

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    8.1     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 18-12 cnfdclk Parameters

Parameter	Description
channel	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).
data mode	Specifies the data transmission mode as either: • TRANS transparent data transmission • DLC H/SDLC data transmission • ASYNC Asynchronous data transmission
clock type	Specifies a clocking type to assign to each channel. Valid clock types are: • **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 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    8.1   Aug. 4 1995  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                                   Min Flags/Frames1
Port ID               0
Port Queue Depth      65535                                OAM Pkt Threshold3pkts
ECN Queue Threshold   65535                                T391 Link Intg Timer6sec
DE Threshold          100            %                     N391 Full Status Poll10cyl
Signalling Protocol   None                                 ForeSight (CLLM)No
Asynchronous Status   No                                   CLLM Status Tx Timer0msec
T392 Polling Verif Timer15                                 IDE to DE MappingYes
N392 Error Threshold  3                                    InterfaceControlTemplate
N393 Monitored Events Count4         Lead                  I
Communicate Priority  No             State                 ON
Upper/Lower RNR Thresh75%/25%

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    8.1    Mar. 15 1995 15:51 PST


Port:       8.1     [ACTIVE  ]
Interface:  V35-4   DCE                   Configured Clock:         256 Kbps
Clocking:   Normal                        Measured Rx Clock:        256 Kbps
Port ID                   40
Port Queue Depth       12000
ECN Queue Threshold    10000              Min Flags / Frames          1
DE Threshold             100 %            OAM FastPacket Threshold    3 pkts
Signalling Protocol Annex A NNI           Link Integrity Timer (T391) 6 secs
Asynchronous Status      Yes              Full Status Polling (N391) 10 cycles
Polling Verif Timer       15              Interface Control Template
Error Threshold            3                 Lead       State
Monitored Events Count     4                  CTS        ON
Communicate Priority      No                  DSR        ON
Upper/Lower RNR Threshold 75/25 %             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 18-13 cnffrport Parameters

slot.p;ort	Specifies the FRP card slot and port number. (Slot and logical port number for T1/E1)
speed	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: 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) The available clock rates for the 1, 2, 3, and 4 port combinations are provided in the command description.
clocking	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. 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)
port type	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.
port ID	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.
port queue depth	specifies the maximum bytes queued for transmission from the FRP port. The range is from 0–65535. The default is 65535.
ecn queue threshold	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.
de threshold	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.

signalling protocol	Specifies the LMI operation mode. The range is from 0-255. The following values are defined (the default is LMI=2): LMI = 0 LMI is disabled at this port. LMI = 1 Cisco LMI and the asynchronous update process is enabled at this port. Greenwich Mean Time is also enabled LMI = 2 LMI is disabled at this port. LMI = 3 Cisco LMI is enabled at this port, but asynchronous update process is disabled. LMI = 4 Port configured as User-Network Interface using CCITT Q.933 Annex A parameters. LMI = 5 Port configured as User-Network Interface using ANSI T1.617 Annex D parameters. LMI = 6 Port configured as Network-Network Interface using CCITT Q.933 Annex A parameters. LMI = 7 Port configured as Network-Network Interface using ANSI T1.617 Annex D parameters.
asynchronous status	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)
polling verify timer	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.
error threshold	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.
monitored events count	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.
communicate priority	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.
upper/lower RNR threshold	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.
min. flags/frame	Specifies the minimum number of flags between frames. All values greater than 0 are valid and the default is 1.
OAM FastPacket threshold	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.
link integrity timer (T391)	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.

full status polling cycle (N391)	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.
card type	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.
CLLM status Tx Timer	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.
IDE to DE mapping	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.
interface control template	Specifies the control leads available on the V.35 and X.21 physical frame relay ports and their status.
channel range	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.
channel speed	Specifies the bandwidth provided for the logical port. Speed is 64 Kbps times the number of DS0s indicated by the Channel Range

cnfftcport

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 18-14 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 **cnfftcport** 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 18-15 FTI Port Supported Data Rates

Port Data Rates for 1Mbps FTI			
1024	512	256	128
896	448	224	112
768	384	192	64
672	336	168	56

When using **cnfftcport** 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    8.1     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: cnfftcport 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 18-16 cnfftcport Parameters

slot.port	Specifies the FRP card slot and port number. (Slot and logical port number for T1/E1)

Table 18-17 cnfftcport Optional Parameters

speed	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: 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) The available clock rates for the 1, 2, 3, and 4 port combinations are as follows: 56 64 72 96 112 384 512
clocking	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. 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)
port ID	Specifies the DLCI associated with the port (16-991).
port queue depth	specifies the maximum bytes queued for transmission from the FRP port. The range is from 0–65535. The default is 65535.
ecn queue threshold	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.
de threshold	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.
signalling protocol	Specifies the LMI operation mode. The range is from 0-255. The following values are defined (the default is LMI=2): 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.
asynchronous status	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)
polling verify timer	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.
error threshold	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.

monitored events count	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.
communicate priority	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.
upper/lower RNR threshold	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.
min. flags/frame	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    8.1     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 18-18 cnfict Parameters

Parameter	Description
channel	Specifies the FastPAD data channel whose interface control template to configure in the format: slot.port.subport.subslot
template	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”.
output	Specifies the output lead to configure. Valid output leads are RTS, CTS, and DCD. on The output lead is asserted. off The outpue lead is inhibited.

Table 18-19 cnfict Optional Parameters

Parameter	Description
delay	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.
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: 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    8.1    Mar. 16 1995 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 18-20 cnfvchtp Parameters

Parameter	Description
channel	Specifies the FastPAD channel for which to configure the interface type where channel is specified in the format: slot.port.subslot
interface type	Specifies the interface type to assign to the channel. This specifies the operational mode of the channel. The possible values are: • 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 18-21 cnfvchtp Optional Parameters

Parameter	Description
dtmf detect	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.
slt timeout	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

cnfic, 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    8.1     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 18-22 cpyict Parameters

Parameter	Description
source channel	Specifies the channel whose interface control template information to copy in the format slot.port.subport.subslot
destination channel	Specifies he 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      Remote      Remote                                        Route
Channel    NodeName    Channel    State  Type    Compression  Code 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     atc12
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     atc12
31.3       IPX         31.1       Ok     session



This Command: delcon 31.1.B.1

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

Table 18-23 delcon Parameters

Parameter	Description	
channel(s)	Specifies the FastPAD channel to delete. Channel is specified in the following format:	
	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    8.1     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 18-24 delfp Parameters

Parameter	Description
slot.port	Specifies the location of the FastPAD to be removed.

Table 18-25 delfp Optional Parameters

Parameter	Description
name	Specifies the name of the FastPAD to be removed.

delftcport

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 18-26

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

delfrport parameters

Related Commands

addfrport, 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    8.1.Z    Mar. 15 1995 17:28 CST

Port configuration for FRP 8

From                    Chan      Speed   Interface    State
1                       9-15      448     FTI T1       ACTIVE
20                      20-24     320     FTI T1       ACTIVE









Last Command: delftcport 8.1


Next Command:
```

Table 18-27 delftcport Parameters

Parameter	Description
slot	Specifies the FTC T1 or E1 line (cabinet slot) number of the port to delete
port	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

cnffrport, 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 18-28

Parameter	Description
slot	Specifies the slot number of the frame relay card with the port to down.
port	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

cnfftcport, 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    8.1     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 18-29 dnftcport Parameters

Parameter	Description
slot	Specifies the slot number of the FTC to down.
port	Specifies the port number to down on the specified FTC card.

dspchcnf

Displays configuration details for FastPAD voice and data channels:

- FastPADVoice 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    8.1     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 18-30 dspchcnf Paramters

Parameter	Description	
start channel	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

dspcons 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    8.1     Date/Time Not Set

Conn:  31.1.8     IPX         31.2.8      atc12


                                                              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 18-31 dspcon Parameters

Parameter	Description	
channel	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 18-32 dspcons Display Fields

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 **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
Type	The type of connection (v = voice, fr = frame relay. 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 (ATC8, ATC12, ATC16, CELP8).
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 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    8.1    Date/Time Not Set

Conn:  31.1.8     IPX         31.2.8      atc12


                                                              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 18-33 dspcons Optional Parameters

Parameter	Description
start channel	Specifies the channel to begin the display. <start channel> is specified in one of the following formats: slot.port.DLCI — frame relay channel remote node.groupname — frame relay group connection If no starting channel is specified, the display begins with the first connected channel. All FastPAD connections are shown as part of frame relay connections on the IPX.
node name	Specifies that only connections to this remote node from the local note 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. Valid connection types are: **-f** Displays all FastPAD and frame relay connections. **+d** **+g** When you enter the connection type on the command line, it must be preceded with a hyphen, "**-**".
+d	Specifies that the display show the connection string in place of the usual compression and ownership fields.

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    8.1     Date/Time Not Set


                    FastPAD FP1      at shelf 31.1
    Card
    Type       Status

 B  BASE       Active                 | Lock Status:   Locked
 1  Empty                              | Composite Link: BASE.8
 2  Empty
 3  Empty
 4  VFC-01     Active(SWITCHED)
 5  Empty
 6  Empty
 7  Empty
 8  VFC-01     Standby


Last Command: dspfp 31.1


 Next Command: dspftcport
```

Table 18-34 dspfp Parameters

Parameter	Description
slot.port	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, dspfps

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    8.1     Mar. 21 1995 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-01card 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 18-35

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    8.1    Mar. 15 1995 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    7.1.B1    Aug. 12 1994 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    8.1    Aug. 4 1995  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 18-36

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: 0 None. 1 ANSI T1.617 Annex D 2 LMI Revision 1

Full Name

Display FTC port configuration

Syntax

dspftcport

Related Commands

cnfftcport, upftcport, dnftcport

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    8.1     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    8.1     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    8.1     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 18-37 dspict Parameters

Parameter	Description
channel	Specifies the channel in the format slot.port.subslot.subport
template	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 18-38 resetfp Parameters

Parameter	Description
slot.port	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 18-39 restartfp Parameters

Parameter	Description
slot.port	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, cnffrport

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    8.1    Mar. 15 1995 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 18-40 restartfp - parameters

Parameter	Description
slot	Specifies slot number of the FRP card containing the port to be upped.
port	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, cnfftcport

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    8.1     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 18-41 upftcport - parameters

Parameter	Description
slot . port	Specifies slot and port number on the FTC card to be upped.

APPENDIX

Command Listing

Click on page number to go to command definition.