SuperUser Commands

Introduction

This chapter contains detailed descriptions of the Cisco WAN switching software SuperUser commands for Release 9.3.20. The Cisco WAN switching software SuperUser command descriptions appear in alphabetical order. You need user privilege level 0 (zero) to use these commands.

Caution These commands are intended to be restricted to Cisco personnel and other qualified users, such as system administrators. Do not distribute this information to casual users because using some SuperUser commands improperly could lead to system malfunction or complete failure.

Also note that once you log into a node as SuperUser (user privilege level 0), you will have access to all the SuperUser commands in this guide throughout the entire session until you log off that node.

Release 9.3.20 Universal Router Module (URM)

The Universal Router Module (URM) is introduced with Release 9.3.20 on the IGX 8400. The URM is functionally equivalent to a UXM card with one ATM port and an IOS router. The URM front card provides basic routing functions. The URM front card and the 2FE2V back card provide IOS-based voice support.

The URM/2FE2V card combination supports the voice features currently available under IOS. The URM supports two T1 or E1 digital voice ports and two Fast Ethernet ports. Basic routing functions are supported concurrently with voice.

The URM hardware consists of an embedded UXM that provides the ATM interface to the IGX network and an embedded IOS-based router. The URM embedded UXM is based on UXM-E hardware. It is logically a one-port UXM without physical interfaces and provides functionality similar to the UXM/UXM-E modules in the IGX.

The URM is a two-processor card. UXM functionality is provided by Admin software running under VxWorks. The router functionality is provided by IOS running independently on a different processor. An internal IPC mechanism is used for Admin to IOS communication over the internal ATM port.

Management of the URM is different from other IGX cards. The IGX CLI is used to manage the embedded UXM and internal ATM port. The IOS CLI and IOS management applications are used to manage the embedded router.

The IGX CLI is enhanced to provide features that facilitate serviceability and monitoring of the URM embedded IOS-based router. New and modified CLI commands used to monitor the embedded router are described in Table 1-1.

Table 1-1 CLI Commands Used to Monitor the URM Embedded IOS-based Router

Command	Description
cnfrtrparm	The new SuperUser CLI command used to configure certain router parameters on a specific router slot. Parameters include rommon action, router reset, and write to bootflash
cnfrtr	The new CLI command used to configure certain router parameters on a specific router slot. Parameters include IOS configuration file source and serial port function.
dsprtr	The new CLI command used to report the router configuration on a specific router slot.
dsprtrslot	The new CLI command used to report router operational information on a specific router slot. Operational information includes: card type, VIC type, IOS software image name, router operational state, and router alarm status.
dsprtrslots	The new CLI command used to report router operational information for all router slots in the IGX. Operational information includes: card type, VIC type, and router alarm status.
dspalms	The enhanced CLI command used to report router IOS status alarms for all router slots in the IGX.
rstrtr	The new CLI command used to reset the router on a specified router slot.

General Information

Note SuperUser commands (privilege level 0) require a different login and password than commands with privilege levels 1–6. Because the privilege level for all SuperUser commands is 0, the privilege level does not appear in the command definition.

Table 1-3 lists the Cisco WAN switch software level 0 (SuperUser) commands in alphabetical order. The table also lists the nodes on which each command is available and whether you can include the command in a job. To access these commands, type in **SuperUser** at the login prompt. Enter the SuperUser password and the password prompt. To exit a command at any point, press the Delete key.

The screen examples in this chapter are based on a network containing an IGX or BPX or any combination of these nodes. For detailed descriptions of commands requiring user-privilege levels 1–6, refer to the *Cisco WAN Switching Command Reference*.

Note Some SuperUser commands are rarely applicable, while misusing other SuperUser commands can cause serious problems in the network. For these commands, the descriptions contain an advisory for you to call the Cisco Technical Assistance Center (TAC) before you proceed. The number in the United States is 800-553-2447. For international access, use 1-408-526-4000.

Descriptions for Statistics CLI Commands

This section briefly describes the statistics command line interface (CLI) descriptions that are provided for various statistics commands (for example, **cnfchstats**, **cnflnstats**, **cnfportstats**, and so on.) Each statistics command displays various field names on the CLI. Note that the descriptions provided in the various statistics description tables may vary from the actual description of the field name as it appears on the switch software command line interface statistics screens.

Only BXM card statistics descriptions are provided; however, note that many of the UXM card statistics are similar or identical to those used for the BXM card. This means that in many cases, the description may also apply to the UXM card. Note also that the statistics descriptions provided in the various tables may not always map directly to the CLI field names, but in many cases, they provide a description of the statistic that is sent from the card firmware to the switch software CLI (through CommBus messages from the firmware to switch software).

Note The BXM CommBus interface is similar in many places to the CommBus interface for previously-released cards (ASI and BNI cards). Note that there are small differences in the CommBus definition for other cards. In some cases the object ID for the BXM card statistic differs from its ASI or BNI counterpart.

Statistics Command Descriptions

There are several tables provided, which contain CommBus messages, along with descriptions of how each message is used by the switch software. Note that in many cases, the CommBus message description provides a description of the statistics field name on the CLI screen display, on **dspchstats**, **dspchstathist**, and so on.

The tables have the following columns:

- **ID**—Indicates the object ID number.
- **Object Name**—Provides a description of the object.
- **Range/Values—**Indicates the legal values that the object can take.
- **Default—**Indicates the default value used by the firmware if this object is not sent. Special defaults:
  - R—Indicates that there is no default and the object must be supplied each time.
  - RI—Indicates that the object is required only at initial setup time.
  - NA—Not Applicable; Indicates that the object is "get-only" so a default value does not apply in this case.
  - NC—No Change.
  - LR—Line Rate (E3, DS3, OC-3, OC-12).
- **Description**—Indicates the use of the object.

Functional Description of Channel Statistics

This operation provides a way for the software to collect channel statistics. The number of channel statistics that can be collected is limited and configurable by software. Note that all of these stats are not available on the Monarch firmware at one time. For the stats that are not configured, a value of zero will be returned during the "get" operation.

In the description column of the screen display, the numbers in brackets indicate how many stats-per-connection need to be configured on the card for the specific statistic to be available over the CommBus interface. [ALL] indicates the statistic is available regardless of the number of configured stats-per-connection. If the number inside the [ ]s is preceded by “A:”, that means that the statistic is available when primary statistics are requested for the connection. If the number inside the [ ]s is preceded by “B:”, that means the statistic is available when secondary statistics are requested for the connection.

Summary of Commands

Table 1-2 contains a list of SuperUser commands.

Table 1-2 List of SuperUser Commands

Command	Description	Job	IGX	BPX
burnfwrev	Burn Firmware Revision	Yes	X	X
clrcderrs	Clear Detailed Card Errors Log	Yes	X	X
clrcnf	Clear Configuration Memory	No	X	X
clrfpevt	Clear FastPAD Event Reporting	No	X	
cnfabrparm	Configure ABR Parameters	Yes	X	
cnfadcom	Configure Access Device Communications Parameters	Yes	X	
cnfbusbw	Configure UBU Bus Bandwidth Parameters	Yes	X	
cnfcdparm	Configure Card Parameters	No	X	X
cnfcdpparm	Configure CDP Card Parameters	No	X	X
cnfcftst	Configure Communications Fail Test Pattern	No	X	X
cnfchstats	Configure Channel Statistics Collection	Yes	X	X
cnfchts	Configure Channel Timestamp	Yes	X	X
cnfcmparm	Configure Connection Management Parameters	Yes	X	X
cnfdiagparm	Configure Diagnostic Test Parameters	No	X	X
cnfdlparm	Configure Download Parameters	No	X	X
cnfecparm	Configure Echo Canceller Parameters	Yes	X	
cnffstparm	Configure Frame Relay Optimized Bandwidth Management Node Parameters	No	X	X
cnflan	Configure LAN	No	X	X
cnflnparm	Configure ATM Line Parameters	No	X UXM	X
cnflnsigparm	Configure Line signaling Parameters	No	X	
cnflnstats	Configure Line Statistics Collection	Yes	X	X
cnfmxbutil	Configure Muxbus Utilization	No	X	
cnfnodeparm	Configure Node Parameters	No	X	X
cnfnwip	Configure Network IP Address	No	X	X
cnfphyslnstats	Configure Physical Line Statistics Collection	Yes	X UXM	

Table 1-2 List of SuperUser Commands (continued)

Command	Description	Job	IGX	BPX
cnfportstats	Configure FR Port Statistics Collection	Yes	X	
cnfrobparm	Configure Robust Alarms Parameters	No	X	X
cnfrtrparm	Configure Universal Router Module (URM) embedded router parameters	Yes	X URM	
cnfslotstats	Configure Slot Statistics Collection	Yes		X
cnfstatparms	Configure Statistics Parameters	No	X	X
cnftcpparm	Configure TCP Parameters	Yes	X	X
cnftermfunc	Configure Terminal Port Parameters	Yes	X	X
cnftlparm	Configure Trunk-based Loading Parameters	No	X	X
cnftrafficgen	Configure Traffic Generation Test Parameters	No	X	X
cnftrkparm	Configure Trunk Parameters	No	X	X
cnftrkstats	Configure Trunk Statistics Collection	Yes	X	X
cnftstparm	Configure Card Self-Test Parameters	Yes	X	X
cnfuiparm	Configure User Interface Parameters	No	X	X
cnfuvmchparm	Configure UVM Channel Parameters	No	X	
cnfvchparm	Configure Voice Channel Parameters	Yes	X	
cpyfpmap	Copy FastPAD Map Table	Yes	X	
dchst	Display CDP Channel Status	No	X	
diagbus	Diagnose Failed Bus	No	X	
dspabortlog	Display Abort Log		X	X
drtop	Display Route Op Table	No	X	X
dspasich	Display ASI Channel Routing Entry	No		X
dspbuses	Display Bus Status	No	X	X
dspcderrs	Display Card Errors	No	X	X
dspcftst	Display Communications Fail Test Pattern	No	X	X
dspchan	Display Channel Configuration	No	X	
dspchoid	Display UXM Connection Operation Routing	Yes	X UXM	
dspchstatcnf	Display Statistics Enabled for a Channel	No	X	
dspchstathist	Display Statistics Data for a Channel	No	X	
dspclnstatcnf	Display Statistics Enabled for a Circuit Line	No	X	
dspclnstathist	Display Statistics History for a Circuit Line	No	X	X
dspcnf	Display Config. Save/Restore Status	No	X	X
dspdnld	Display Download	No	X	X
dspdutl	Display Data Channel Utilization	No	X	
dspecparm	Display Echo Canceller Parameters	No	X	
dspfwrev	Display Firmware Revision	No	X	X

Table 1-2 List of SuperUser Commands (continued)

Command	Description	Job	IGX	BPX
dsplnstatcnf	Display Statistics Enabled for a Line	No	X	X
dsplnstathist	Display Statistics Data for a Line	No	X	X
dspphyslnstatcnf	Display Statistics Enabled for a Physical Line on a UXM	No	X	
dspphyslnstathist	Display Statistics History for a Physical Line on a UXM	No	X	
dspplnmcons	Display Packet Line Connection Counts by Master Node	No	X	
dspportstatcnf	Display Statistics Enabled for an FR Port	No	X	
dspportstathist	Display Statistics History for an FR Port	No	X	
dsprevs	Display Revisions	No	X	X
dsprobst	Display Robust Statistics	No	X	X
dsprrst	Display Reroute Statistics	No	X	X
dspsig	Display signaling	No	X	
dspslot	Display Slot	No	X	X
dspslotstatcnf	Display Statistics Enabled for a Slot	No	X	X
dspslotstathist	Display Statistics History for a Slot	No	X	X
dspstatmem	Display Statistics Memory Use	No	X	X
dsptcpparm	Display TCP Parameters	No	X	X
dspswlog	Display Software Errors Log		X	X
dsptrkcons	Display Trunk Connection Counts	No	X	X
dsptrkmcons	Display Trunk Connection Counts by Master Node	No	X	X
dsptrkstatcnf	Display Statistics Enabled for a Trunk	No	X	X
dsptrkstathist	Display Statistics History for a Trunk	No	X	X
dsputl	Display Voice Connection Utilization	No	X	
getfwrev	Get Firmware Revision	Yes	X	X
killuser	Kill User	No	X	X
loadcnf	Load Configuration	Yes	X	X
loadrev	Load Revision	No	X	X
prtcderrs	Print Card Errors	Yes	X	X
rrtcon	Reroute Connection	Yes	X	X
rststats	Reset Statistics Collection TIme	Yes	X	X
runcnf	Run Configuration	No	X	X
runrev	Run Revision	No	X	X
savecnf	Save Configuration	Yes	X	
tststats	Test Statistics	No	X	X
tstubus	Test UBU Allocation Spacing	Yes		

Table 1-2 List of SuperUser Commands (continued)

Command	Description	Job	IGX	BPX
upgdlogcd	For BXM to BXM-E card, manually upgrade the logical card database	No		X
upggrp	Upgrade Groups	No	X	X

burnfwrev (Burn Firmware Image into Card(s)

The **burnfwrev** command burns a new firmware image into a specific card.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

dspfwrev, **getfwrev**

Syntax

burnfwrev <image name> <slot number>

<image name>	Specifies the name of the firmware image to burn. You should typically enter image names in all capital letters; also, image names are case-sensitive.
<slot number>	Specifies the shelf slot where the card to burn is located. Specifying slot 0 will burn all cards of the appropriate type at the local node.

Function

This command is used to burn a firmware image into the memory of a specific card. Before you use **burnfwrev**, the firmware image must already reside in the controller card's memory. (Use **getfwrev** to load the image to the controller.)

A few seconds after you enter **burnfwrev**, the system displays a screen similar to the one in Figure 1-1, then the Burn Address column starts to indicate the addresses that are being "burned." When **burnfwrev** finishes, the status changes to "Complete."

After all cards at a node have been updated with **burnfwrev**, enter the following to clear the firmware image from the controller card's buffer area:

getfwrev 0.0 *node_name*

Use the **dspfwrev** command to display the firmware image status on the controller card at any time after **burnfwrev** has finished.

At the SuperUser level (0), you can use **burnfwrev** only to change the *revision level* of a card's firmware. If the firmware revision would result in a new *model number* for the card, only a user with a higher privilege level can burn the firmware image. In this case, you would have to call the TAC to execute the command.

Figure 1-1 burnfwrev—Burn Firmware Revision into Card

```
gamma             TRM       SuperUser        Rev: 9.2 Aug. 17 1998  14:28 PDT

Firmware        Size        Status
F.D.A           256 K       Burning into slot 19 (6 lives)

File            Address     Length      CRC           Burn Address
0               800000      10          E986E939
1               800800      410         22996DDA
2               801000      2D40        B212147F
3               805E60      480         85CB29EA
4               80A630      70          57A938AE
5               80A6B0      20          4B9E8DDC
6               810000      10000       338E45F6
7               820000      4400        95990113
8               835000      1810        875771B2
9               8368A0      15D0        4C597B97


This Command: burnfwrev

Continue?
```

clrcderrs (Clear Detailed Card Errors)

The **clrcderrs** command clears the history of card failures (errors) associated with the specified slot.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

dspcderrs, **prtcderrs**

Syntax

clrcderrs <slot number | *>

<slot number	*>	Specifies the slot number to clear. A “*” can be entered to clear all cards.

Function

This command clears the history of card failures associated with the specified slot. When you enter this command the system responds with Slot Number or *. After you enter the command, the system asks you to confirm that it is OK to clear this data.

For example, to clear the data from the FRM card in slot 3, enter the command illustrated in Figure 1-2. This screen also illustrates the card’s stored data.

Figure 1-2 clrcderrs—Clear Card Errors (before confirmation)

```
pubsigx1       TN    SuperUser       IGX 32    9.2       Aug. 5 1998  18:48 GMT

FRM in Slot 3  : 172240 Rev ESJ     Failures Cleared: Date/Time Not Set
----------------------------------- Records Cleared:  Date/Time Not Set
Self Test          Threshold Counter: 0          Threshold Limit: 300
Total Pass: 495           Total Fail: 0              Total Abort: 2
First Pass: Date/Time Not Set          Last Pass: July 29 1998 19:36:48 GMT
First Fail:                            Last Fail:

Background Test    Threshold Counter: 0          Threshold Limit: 300
Total Pass: 29849         Total Fail: 0              Total Abort: 0
First Pass: Date/Time Not Set          Last Pass: Aug. 5 1998  18:46:34 GMT
First Fail:                            Last Fail:

Hardware Error     Total Events: 0     Threshold Counter: 0
First Event:                           Last Event:


This Command: clrcderrs 3


OK to clear (y/n)?
```

After replying “y” (yes) to the confirmation prompt, the screen appears as in Figure 1-3.

Figure 1-3 clrcderrs—Clear Card Errors (after confirmation)

```
pubsigx1       TN    SuperUser       IGX 32    9.2       Aug. 5 1998  18:55 GMT

FRM in Slot 3  : 172240 Rev ESJ     Failures Cleared: Date/Time Not Set
----------------------------------- Records Cleared:  Aug. 5 1998  18:55:02 GMT
Self Test          Threshold Counter: 0          Threshold Limit: 300
Total Pass: 0             Total Fail: 0             Total Abort: 0
First Pass:                            Last Pass:
First Fail:                            Last Fail:

Background Test    Threshold Counter: 0          Threshold Limit: 300
Total Pass: 0             Total Fail: 0             Total Abort: 0
First Pass:                            Last Pass:
First Fail:                            Last Fail:

Hardware Error     Total Events: 0     Threshold Counter: 0
First Event:                           Last Event:

Last Command: clrcderrs 3


Next Command:
```

clrcnf (Clear Configuration Memory)

The **clrcnf** command clears the configuration memory at the current node and resets the node.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	Yes

Associated Commands

loadcnf, **runcnf**, **savecnf**

Syntax

clrcnf

Function

The **clrcnf** command erases most network configuration data. This configuration data includes connections, trunks, circuit lines, and so on, for the local node. You may need to use the **clrcnf** command when you upgrade the network with a new software release or when you move a node. A warning and a confirmation prompt appear before the command executes. Figure 1-4 illustrates a typical screen.

This command should be used only on a node that has not yet been placed in service or when the network configuration has been previously saved so it can be quickly reloaded. The configuration can be saved in one of several ways:

- On a Cisco WAN Manager terminal using the **savecnf** command. The node is then reloaded using the **loadcnf** command.
- On a standby controller card. Before entering the **clrcnf** command, remove the standby controller from its slot. The configuration data will be maintained in BRAM even though the power has been removed from the card.

Caution Use **clrcnf** with extreme caution. Typically, you should use **clrcnf** only if the Cisco TAC has instructed you to do so. This command can make the node unreachable to the network.

Figure 1-4 clrcnf—Clear Node Configuration

```
*** Warning: ***
This command clears the configuration memory and resets the Node.









This Command: clrcnf

Are you sure (y/n)?
```

cnfabrparm (Configure Assigned Bit Rate Queue Parameters)

The **cnfabrparm** command configures parameters for the Assigned Bit Rate (ABR) queue on all ports on the selected UXM.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfportq, **dspportq**, **cnfport**, **dspport**

Syntax

cnfabrparm <slot> <CI_control> <ER_control>

<slot>	Specifies the slot number of the UXM.
<CI_control>	Enables or disables Egress/Ingress Congestion Information control.
<ER_control>	Enables or disables ABR RM cell Explicit Rate stamping.

Function

The **cnfabrparm** command lets you toggle the Egress/Ingress Congestion Information control and/or the ABR RM cell Explicit Rate stamping parameters on and off. All ports on the UXM in the selected slot are dynamically reconfigured according to the new parameters.

Example

```
sw205          TN    SuperUser       IGX 8420    9.2    Jan. 27 1998 04:50 GMT

ABR Configuration for UXM in slot 5

CI Control         : N
Egress ER Stamping : N









This Command: cnfabrparm 5
```

cnfbusbw (Configure UXM Card Bus Bandwidth)

The **cnfbusbw** command configures the amount of bandwidth allocated on the bus for a UXM card.

Attributes

Jobs: Yes Log: Yes Lock: Yes Node Type: IGX

Associated Commands

dspbusbw (a standard user command)

Syntax

cnfbusbw <slot>

<slot>	Specifies the slot number of the UXM.
<bw>	Specifies the amount of bandwidth to be allocated in UBUs, which the system converts to either FastPackets per second or cells per second. The maximum rate you can set is 288,000 cells per second, which is 72 UBUs. Each UBU is the equivalent of 4000 cells per second.

Function

The **cnfbusbw** command lets you configure the amount of bandwidth allocated on the bus for the selected UXM (see Figure 1-5). The default amount of bus bandwidth allocated depends on the connection type you are adding; 77 Mbps (1/2 OC-3 rate) of bus bandwidth is allocated to an OC-3 port card when the first line is upped. For the T3/E3 line, 44/34 Mbps (T3/E3 rate) is allocated as default bus bandwidth. For a T1/E1 line, the amount of bandwidth allocated will be enough for all T1/E1 lines supported on the card. After the default bus bandwidth is allocated, the system will not allocate any more bus bandwidth to the card when you activate more lines, so you must manually allocate the bus bandwidth to the card using the **cnfbusbw** command. Table 1-3 lists the **cnfbusbw** screen information. All ports on the UXM in the selected slot are dynamically reconfigured according to the new parameters.

Table 1-3 cnfbusbw—Screen Information

Display	Description
Minimum Required Bandwidth	Minimum bandwidth in FastPackets per second and cells per second required for all connections currently configured on this card. This is calculated by UXM firmware as connections are added.
Maximum Port Bandwidth	Total bandwidth of all active trunks/ports on this card in FastPackets per second, cells per second and UBUs.

Table 1-3 cnfbusbw—Screen Information (continued)

Display	Description
Average Bandwidth and Peak Used Bandwidth	Statistics counters maintained by UXM firmware. These statistic counters display FastPackets per second, cells per second, and UBUs. Use this information when calculating the amount of bus bandwidth to be allocated. These counters will be cleared when the UXM card is reset.
Last Updated time	Shows the time when the counters were last updated. This will be the current time if you answered yes to the `Get updated bandwidth info from card (Y/N)?` prompt or entered the command with the u parameter.
Allocated Bandwidth	The bandwidth allocated for this card using the **cnfbusbw** command. Allocated bandwidth is specified in UBU units and converted to either FastPackets per second or cells per second by the system.

Figure 1-5 cnfbusbw (Configure UXM Card Bus Bandwidth)

```
sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  03:15 GMT

Bus Bandwidth Usage for UXM card in slot 5   Last Updated on 04/07/98 03:15:42

                          FPkts/sec   Cells/sec    UBUs
Minimum Reqd Bandwidth:           0      100100     26
Average Used Bandwidth:           0           0      0
Peak    Used Bandwidth:           0           0      0
Maximum Port Bandwidth:           -      288000     72

Allocated    Bandwidth:                              1
           (Cell Only):           -        4000
           (Cell+Fpkt):        2000        3000
           (Fpkts / 2 + Cells)   <=        4000


Reserved     Bandwidth:           -        4000      1

This Command: cnfbusbw 5


Allocated UBU count:
```

cnfcdparm

Use the **cnfcdparm** command to configure the channel statistic level on the BXM/UXM card. This command supports the multilevel channel statistics feature, which lets you configure and display additional levels of statistics on a BXM or UXM card.

Configuration of the channel statistic level is a slot-based parameter. For example, if slot 5 is configured to support level 3 channel statistics, all connections on the card in slot 5 will be set to level 3 statistics.

The multilevel channel statistics feature is supported on the BPX and IGX platforms, for BXM and UXM cards. (Refer to release notes for card firmware release requirements.) The multilevel channel statistics feature requires switch software to collect, display, and propagate to Cisco WAN Manager the various statistics types. The channel statistic types vary in number and type based upon the level of support provided by the BXM and UXM cards.

Apart from the **cnfcdparm** command that you use to configure the channel statistic level on the BXM/UXM cards, you configure and use the BXM/UXM channel statistics similarly as in previous releases. You use the following commands to configure BXM and UXM card statistics:

- Summary Statistics Commands: **dspchstats**, **clrchstats**
- Interval Statistics Commands: **dspchstathist**, **dspchstatcnf**, **cnfchanstats** (statistics information collected by these commands is sent to Cisco WAN Manager).
- Line and Trunk Management Commands: **upln**, **uptrk**

Description of Summary and Interval Statistics

Summary statistics are also referred to as real-time statistics or real-time measurements. These statistics show their values updating in real time, for example, the counter for the number of cells transmitted increment as you are watching.

Commands to view real-time statistics:

- **dsptrkstats**
- **dspportstats**
- **dspchstats**

Interval statistics is a general name for three specific statistic types: TFTP statistics, AUTO statistics, and USER statistics. They are also commonly referred to as detailed statistics or history statistics. Interval statistics show historical information, for example, the number of cells transmitted in the previous 30 minutes.

Commands to view the enabled interval statistics:

- **dspchstatcnf**
- **dsplnstatcnf**
- **dspportstatcnf**
- **dsptrkstatcnf**
- **dspslotstatcnf**

Commands to view a single enabled interval statistic in detail:

- **dspchstathist**
- **dsplnstathist**

- **dspportstathist**
- **dsptrkstathist**

You can enable the TFTP statistics by using the debug command **cnfstatparms** or from the Cisco WAN Manager Statistics Collection Manager (SCM). (Note that you need to have either Service or SuperUser level access to use debug commands.) When they are enabled, all objects that can support an enabled statistic will attempt to do so. For example, if enabling trunk statistic #5, all trunks that can support trunk statistic #5 will attempt to enable it. These statistics are generally used for billing and monitoring the network's performance.

AUTO statistics, also referred to as IGX or BPX feature statistics, are used for the switches' statistical alarming feature. As their name implies, these statistics are automatically allocated when certain statistical entities are upped or added. Auto stat entries on the IGX are ADPCM, ADPNO, PCM, Transparent and Data connections, as well as trunks and lines. Auto statistic entities on the BPX are trunks, lines, and cards.

These commands enable USER statistics:

- **cnftrkstats**
- **cnflnstats**
- **cnfportstats**
- **cnfchstats**
- **cnfslotstats**

These statistics are enabled on a specified entity; for example, enabled trunk statistic #5 on trunk 4.2. User statistics are mainly used for debugging.

Multilevel Channel Statistics Support

The number of statistics available are based upon the statistics level programmed on the BXM or UXM card. Table 1-4 lists the channel statistics available on the BXM and UXM cards. The four different levels supported are shown, along with the statistics field description as it appears on the related statistics screens (**dspchstats**, **cnfcdparm**, **clrchstats**, **dspchstathist**, **dspchstatcnf**, **cnfchanstats**). Refer to Table 1-7 for descriptions of the channel statistics listed in Table 1-4.

Statistics are available as summary and interval statistics. (The "interval" commands **dspchstathist**, **dspchstatcnf**, and **cnfchanstats** commands are available through the switch software CLI.) Additionally, statistics information collected by the interval commands is sent to Cisco WAN Manager and can be viewed through that interface.

Table 1-4 Channel Statistics Available on BXM and UXM Cards

Level 0	Level 1	Level 2	Level 3
No Stats	RX Cells from port	All level 1	All Level 2
	RX EOF's from port	TX EFCI 1 to Port	RX EFCI 1 from Port
	RX cells to NW	RX CLP0 to NW	RX EFCI 0 from Port
	RX CPL1 from port	RX CLP1 to NW	TX EFCI 0 from NW
	RX cells Non-cmplt	TX EFCI 0 to Port	TX EFCI 1 from NW
	RX CLP0 Non-cmplt	RX EFCI 0 to NW	
	RX CLP1 Non-cmpl	RX EFCI 1 to NW	OAM from Port

Table 1-4 Channel Statistics Available on BXM and UXM Cards (continued)

Level 0	Level 1	Level 2	Level 3
	Ingress VC Q depth	TX EOFs to Port	RM Cells from Port
	TX cells from NW		RM From NW
	TX CLP1 to Port	RX EOF CNG DSC	OAM From NW
	TX Cells to Port		RM Cells to Port
	RX CLP0 Cng Dscd		Rx EFCI 0 Cng Dsc
	RX CLP1 Cng Dscd		Rx EFCI 1 Cng Dsc
	RX CLP0 from Port		Rx OAM Cng Dsc
	TX CLP0 Cells to Port		Rx RM Cng Dsc
	TX CLP0 from NW		Rx FRM to NW
	TX CLP1 from NW		Rx BRM/Fst to NW
	Ingress VSVD ACR		Tx EFCI 0 Cng Dsc
	Egress VSVD ACR		Tx EFCI 1 Cng Dsc
	Egress VC Q Depth		Tx RM Cng Dsc
			Tx OAM Cng Dsc
	*TX CLP 0 Dscd		
	*TX CLP 1 Dscd		
	*TX CLP0+1 Dscd		
	*RX CLP0+1 from prt		
	*OAM State		
	* indicates summary stats only		

The BXM and UXM cards can be configured for multilevel channel statistics collection. You configure the channel statistic levels by using the **cnfcdparm** command. You can configure the channel statistics level only on a standby card. If you attempt to execute the **cnfcdparm** command on an active controller card, you will get a warning telling you that you cannot use the **cnfcdparm** on an active card.

The **cnfcdparm** command allows you to set the statistic level on a UXM or BXM card. However, the **cnfcdparm** command will not allow you to change the statistics level if the card is active. The switch software detects the current channel statistics level available on the UXM or BXM card. Also, switch software performs the following card mismatch verification:

- When a card is inserted, if the channel statistic level decreases from the entry in the logical card database, the card will mismatch.
- When a card is inserted, if the channel statistic level increases from the entry in the logical card database, the card will not mismatch. The logical card database will NOT be updated with the increased channel statistic level value, and you will have available only the number of statistics described on the primary card.
- During the Y-cable mismatch verification, if the secondary card has a smaller channel statistic level, then the primary card (logical card) and the secondary card will mismatch.

- During the Y-cable mismatch verification, if the channel statistic level is larger on the secondary card, the card will not mismatch. The Y-cable will continue to operate based on the number of statistics available on the primary/logical card.

UXM/BXM Multilevel Channel Statistics Feature

The multilevel channel statistics feature supports the following functions in card management, channel statistics, and Cisco WAN Manager:

Card Management

- Recognizing card support for new features
- Support for reconfiguration of channel statistics levels
- Support for Y-redundant configuration
- Mismatch checking
- Support for upgrade of new feature on current configurations

Channel Statistics

- Support for channel statistics on cards that do not support multilevel statistics
- Support for port channel statistics on cards that support multilevel statistics
- Support for trunk channel statistics on cards that support multilevel statistics

Cisco WAN Manager

- Cisco WAN Manager will be informed about changes in the card's channel statistics level
- Cisco WAN Manager will be informed about enabled channel statistics on a statistics level basis
- Correct TFTP channel statistics are enabled after an upgrade to multilevel statistics

Cisco WAN Manager

Cisco WAN Manager supports the multilevel channel statistics as provided by the BXM and UXM cards.

Channel Statistics Collection and Display

The multilevel channel statistics are similar to the statistics supported on the current BXM and UXM cards. These channel statistics are accumulated in a historical format using the same collection technique as the current channel statistics. You configure the interval statistics by using the **cnfchstats** command, and display them by using the **dspchstathist** command. In addition, you can get summary statistics by using the **dspchstats** command. You display the additional channel statistics screens by either pressing Return or "y" for yes, depending on whether you are on a BPX or IGX node.

The actual number of statistics available is based on the channel statistics level you configure by using the **cnfcdparm** command.

The following CLI commands configure and display channel statistics:

- **cnfchstats**
- **dspchstatcnf**

- **dspchstathist**
- **dspchstats**

Memory Requirements

Additional memory is required to support channel summary statistics on the BPX and IGX platforms.

BPX Platform

132,000 bytes = (33 new stats) * (1000 summary stat entries) * (4 bytes per stat entry)

IGX Platform

112,000 bytes = (8 new stats) * (3500 summary stat entries) * (4 bytes per stat entry)

Table 1-5 lists the current controller card memory configurable parameters, and Table 1-6 lists the BPX polling intervals and number of connections supported.

Table 1-5 Maximum Statistics Memory per Controller Card

Control Card	TFTP/User Memory
BCC 32	610K
BCC 64	12.7M
NPM 32	2.0M
NPM 64	12.7M

Table 1-6 BPX Polling Interval

Conns Supported	Polling Interval
1-3999 conns	5 minutes
4000-7999 conns	10 minutes
9001-12,000 conns	15 minutes

Table 1-7 lists the BXM/UXM channel statistics object name, levels, and descriptions.

Note In most cases, the statistic's object name is similar or identical to the statistic's field name as it appears at the CLI.

Table 1-7 BXM/UXM Channel Statistics Names, Levels, and Descriptions

Object ID	Object Name	Level	Range/Values	Description
05	Rx Cells From Port	1	0 - 2^{32}-1	Number of cells received at the ingress of the connection. [A:ALL, B:ALL] (Note: This count is retrieved from the RCMP chip.)
06	Rx EOFs From Port	1	0 - 2^{32}-1	Number of EOFs received at the ingress of the connection. [A:ALL, B:12, B:28]
07	Rx Cells to Backplane	1	0 - 2^{32}-1	Number of cells rx'd at the ingress that were sent to the backplane. [A:ALL, B:ALL]
08	Rx CLP=1 Cells From Port	1	0 - 2^{32}-1	Number of cells received at the port with CLP=1. [A:ALL, B:ALL] (Note: This count is retrieved from the RCMP chip.)
09-0B	RESERVED			
0C	Rx EFCI=1 Cells From Port	3	0 - 2^{32}-1	Number of cells received at the port with EFCI=1. [A:28, B:28]
0D	RESERVED			
0E	Non-Compliant Cell Count (Total)	1	0 - 2^{32}-1	Number of cells received at the ingress of the connection that were non-compliant discarded. [A:ALL, B:ALL]. (Note: This is a 16-bit counter in the hardware—it can wrap in less than a second depending upon the non-compliant rate.)
0F	Non-Compliant Cell Count (CLP 0 Only)	1	0 - 2^{32}-1	Number of CLP 0 cells received at the ingress of the connection that were non-compliant dropped. [A:ALL, B:ALL]. (Note: This is a 16-bit counter in the hardware—it can wrap in less than a second depending upon non-compliant rate.)
10	Non-Compliant Cell Count (CLP 1 Only)	1	0 - 2^{32}-1	Number of CLP 1 cells received at the ingress of the connection that were non-compliant dropped. [A:ALL, B:ALL]. (Note: This is a16-bit counter in the hardware—it can wrap in less than a second depending upon non-compliant rate.)
11	Ingress VC Q Depth	1	0 - 2^{32}-1	Current Ingress VC Queue Depth. [A:ALL, B:ALL]
12-14	RESERVED			
15	Rx Rsrc Ovfl Discards	N.A.	0 - 2^{32}-1	Number of cells received at the port that were discarded due to Resource Overflow. [B:ALL]
16-1E	RESERVED			
1F	Tx Cells From Network	1	0 - 2^{32}-1	Number of cells received from the backplane. [A:ALL, B:ALL]
20	Tx CLP=1 To Port	1	0 - 2^{32}-1	Number of cells transmitted out the port with CLP=1. [A:ALL, B:12, B:28]

Table 1-7 BXM/UXM Channel Statistics Names, Levels, and Descriptions (continued)

Object ID	Object Name	Level	Range/Values	Description
21	Tx EFCI=1 To Port	2	0 - 2^{32}-1	Number of cells transmitted out the port with EFCI=1. [A:12, A:28, B:12, B:28]
22	Tx Cells To Port	1	0 - 2^{32}-1	Number of cells transmitted out the port. [A:ALL, B:ALL]
23-26	RESERVED			
27	Loopback RTD Measurement	N.A.	0 - 2^{32}-1	The Loopback Round Trip Delay measurement in msec. (Still under investigation.) Used to initiate the measurement (Set). The Get is used to get the last measurement known; or zero if now known.
28	Local Ingress Rx State	1	0 : Okay 1 : FERF (aka RDI) 2 : AIS	The OAM connection state. [A:ALL, B:ALL]
29	Rx CLP=0 Congested Discards	1	0 - 2^{32}-1	Number of CLP=0 Cells received from the port and discarded due to congestion (after the policer). [A:ALL, B:None]
2A	Rx CLP=1 Congested Discards	1	0 - 2^{32}-1	Number of CLP=1 Cells received from the port and discarded due to congestion (after the policer). [A:ALL, B:None]
2B	Rx CLP=0 Cells From Port	1	0 - 2^{32}-1	Number of CLP=0 Cells received from the port. [A:ALL, B:ALL] (NOTE: This stat is received from the RCMP.)
2C	Tx CLP=0 Cells To Port	1	0 - 2^{32}-1	Number of CLP=0 Cells transmitted to the port. [A:ALL, B:12, B:28]
2D	Tx CLP=0 Cells From Backplane	1	0 - 2^{32}-1	Number of CLP=0 Cells received from the backplane. [A:ALL, B:28]
2E	Rx CLP=0 Cells To Backplane	2	0 - 2^{32}-1	Number of CLP=0 Cells sent to the backplane. [A:ALL, B:12, B:28]
2F	Tx CLP=1 Cells From Backplane	1	0 - 2^{32}-1	Number of CLP=1 Cells received from the backplane. [A:ALL, B:28]
30	Rx CLP=1 Cells To Backplane	2	0 - 2^{32}-1	Number of CLP=1 Cells sent to the backplane. [A:12, A:28, B:12,B:28]
31	Rx EFCI=0 Cells From Port	3	0 - 2^{32}-1	Number of EFCI=0 Cells received from the port. [A:28, B:28]
32	Tx EFCI=0 Cells To Port	2	0 - 2^{32}-1	Number of EFCI=0 Cells transmitted to the port. [A:12,A:28, B:12, B:28]
33	Tx EFCI=0 Cells From Backplane	3	0 - 2^{32}-1	Number of EFCI=0 Cells received from the backplane. [A:28, B:28]
34	Rx EFCI=0 Cells To Backplane	2	0 - 2^{32}-1	Number of EFCI=0 Cells sent to the backplane. [A:12, A:28, B:12, B:28]

Table 1-7 BXM/UXM Channel Statistics Names, Levels, and Descriptions (continued)

Object ID	Object Name	Level	Range/Values	Description
35	Tx EFCI=1 Cells From Backplane	3	0 - 2^{32}-1	Number of EFCI=1 Cells received from the backplane. [A:28, B:28]
36	Rx EFCI=1 Cells To Backplane	2	0 - 2^{32}-1	Number of EFCI=1 Cells sent to the backplane. [A:12, A:28, B:12, B:28]
37	Tx EOFs to Port	2	0 - 2^{32}-1	Number of cells with EOF sent to the port. [A:12, A:28, B:28]
38	Tx EOFs from Backplane	N.A.	0 - 2^{32}-1	Number of EOFs received at the backplane. [B:12, B:28]
39	Rx EOFs to Backplane	N.A.	0 - 2^{32}-1	Number of cells with EOF sent to the backplane. [B:28]
3A	Rx Segment OAM	3	0 - 2^{32}-1	Number of Segment OAM cells received at the port. [A:28, B:28]
3B	Tx Segment OAM	3	0 - 2^{32}-1	Number of Segment OAM cells received at the egress. [A:28, B:28]
3C	Rx End-to-End OAM	3	0 - 2^{32}-1	Number of End-to-End OAM cells received at the port. [A:28, B:28]
3D	Tx End-to-End OAM	3	0 - 2^{32}-1	Number of End-to-End OAM cells received at the egress. [A:28, B:28]
3E	Rx Forward RM Cells	3	0 - 2^{32}-1	Number of Forward RM cells received at the port. [A:28, B:28]
3F	Tx Forward RM Cells	3	0 - 2^{32}-1	Number of Forward RM cells received at the backplane. [A:28, B:28]
40	Rx Backward RM Cells	3	0 - 2^{32}-1	Number of Backward RM cells received at the port. [A:28, B:28]
41	Tx Backward RM Cells	3	0 - 2^{32}-1	Number of Backward RM cells received at the backplane. [A:28, B:28]
42	Rx Optimized Bandwidth Management RM Cells	N.A.	0 - 2^{32}-1	Number of Optimized Bandwidth Management RM cells received at the port. [B:28]
43	Tx Optimized Bandwidth Management RM Cells	N.A.	0 - 2^{32}-1	Number of Optimized Bandwidth Management RM cells received at the backplane. [B:28]
44	Rx Undefined RM Cells	N.A.	0 - 2^{32}-1	Number of Undefined RM cells received at the port. [B:28]
45	Tx Undefined RM Cells	N.A.	0 - 2^{32}-1	Number of Undefined RM cells received at the backplane. [B:28]
46	Tx Rsrc Ovfl Discards	N.A.	0 - 2^{32}-1	Number of cells rx'd at the backplane that were discarded due to Resource Overflow. [B:ALL]
47	Rx VI Cell Discards	N.A.	0 - 2^{32}-1	Number of cells received at the port that were discarded because of a full VI. [B:12, B:28]

Table 1-7 BXM/UXM Channel Statistics Names, Levels, and Descriptions (continued)

Object ID	Object Name	Level	Range/Values	Description
48	Tx VI Cell Discards	N.A.	0 - 2^{32}-1	Number of cells rx'd at the backplane discarded because of a full VI. [B:12, B:28]
49	Rx QBIN Cell Discards	N.A.	0 - 2^{32}-1	Number of cells rx'd at the port discarded due to QBIN threshold violation. [B:12, B:28]
4A	Tx QBIN Cell Discards	N.A.	0 - 2^{32}-1	Number of cells rx'd at the backplane that were disc. due to QBIN thres. violations. [B:12, B:28]
4B	Rx VC Cell Discards	N.A.	0 - 2^{32}-1	Number of cells rx'd at the port that were disc. due to VC thres. violations. [B:12, B:28]
4C	Tx VC Cell Discards	N.A.	0 - 2^{32}-1	Number of cells rx'd at the backplane that were discarded due to VC thres. violations. [B:ALL]
4D	Rx Cell Filter Discards	N.A.	0 - 2^{32}-1	Number of cells received at the port that were discarded due to cell filter action. [B:12, B:28]
4E	Tx Cell Filter Discards	N.A.	0 - 2^{32}-1	Number of cells rx'd at the backplane that were discarded due to cell filter action. [B:12, B:28]
4F	Rx Illegal Event Cells	N.A.	0 - 2^{32}-1	Number of cells rx'd at the port that caused an reserved event in the hardware. [B:28]
50	Tx Illegal Event Cells	N.A.	0 - 2^{32}-1	Number of cells rx'd at the backplane that caused an reserved event in the H/W. [B:28]
51	Ingress VSVD ACR	1	0 - 2^{32}-1	Ingress VSVD allowed Cell Rate. [A:ALL, B:ALL]
52	Egress VSVD ACR	1	0 - 2^{32}-1	Egress VSVD allowed Cell Rate. [A:ALL, B:ALL]
53	Egress VC Q Depth	1	0 - 2^{32}-1	Current Egress VC Queue Depth. [A:ALL, B:ALL]
54	Bkwd SECB	N.A.	0 - 2^{32}-1	Backward reporting Performance Monitoring Severely Errored Cell Blocks. [A:ALL, B:ALL]
55	Bkwd Lost Cells	N.A.	0 - 2^{32}-1	Backward reporting Performance Monitoring Lost Cell Count. [A:ALL, B:ALL]
56	Bkwd Misinserted Cells	N.A.	0 - 2^{32}-1	Backward reporting Performance Monitoring Misinserted Cell Count. [A:ALL, B:ALL]
57	Bkwd BIPV	N.A.	0 - 2^{32}-1	Backward reporting Performance Monitoring Bipolar Violation Count. [A:ALL, B:ALL]
58	Fwd SECB	N.A.	0 - 2^{32}-1	Forward reporting Performance Monitoring Severely Errored Cell Blocks. [A:ALL, B:ALL]

Table 1-7 BXM/UXM Channel Statistics Names, Levels, and Descriptions (continued)

Object ID	Object Name	Level	Range/Values	Description
59	Fwd Lost Cells	N.A.	0 - 2^{32}-1	Forward reporting Performance Monitoring Lost Cell Count. [A:ALL, B:ALL]
5A	Fwd Misinserted Cells	N.A.	0 - 2^{32}-1	Forward reporting Performance Monitoring Misinserted Cell Count. [A:ALL, B:ALL]
5B	Fwd BIPV	N.A.	0 - 2^{32}-1	Forward reporting Performance Monitoring Bipolar Violation Count. [A:ALL, B:ALL]
5C-5F	RESERVED			
60	SAR Good PDUs Rcv	?	0 - 2^{32}-1	Number of good PDUs received by the SAR. [A:ALL, B:ALL]
61	SAR Good PDUs Xmt	?	0 - 2^{32}-1	Number of good PDUs transmitted by the SAR. [A:ALL, B:ALL]
62	SAR Rcv PDUs Discarded	?	0 - 2^{32}-1	Number of PDUs discarded on the ingress by the SAR. [A:ALL, B:ALL]
63	SAR Xmt PDUs Discarded	?	0 - 2^{32}-1	Number of PDUs discarded on the egress by the SAR. [A:ALL, B:ALL]
64	SAR Invalid CRC PDUs Rcvd	?	0 - 2^{32}-1	Number of invalid CRC32 PDUs received by the SAR. [A:ALL, B:ALL]
65	SAR Invalid Length PDUs Rcvd	?	0 - 2^{32}-1	Number of invalid-length PDUs received by the SAR. [A:ALL, B:ALL]
66	SAR Short Length Failures	?	0 - 2^{32}-1	Number of short-length failures detected by the SAR. [A:ALL, B:ALL]
67	SAR Long Length Failures	?	0 - 2^{32}-1	Number of long-length failures detected by the SAR. [A:ALL, B:ALL]
	TX FRM to Port	2	0 - 2^{32}-1	
	TX BRM and Fst to Prt	2	0 - 2^{32}-1	
	RX EOF Congestion Discard	2	0 - 2^{32}-1	
	RX EFCI 0 Congestion Discard	3	0 - 2^{32}-1	
	RX EFCI 1 Congestion Discard	3	0 - 2^{32}-1	
	RX OAM Congestion Discard	3	0 - 2^{32}-1	
	RX RM Congestion Discard	3	0 - 2^{32}-1	

Table 1-7 BXM/UXM Channel Statistics Names, Levels, and Descriptions (continued)

Object ID	Object Name	Level	Range/Values	Description
	RX FRM to Network	3	0 - 2^{32}-1	
	RX BRM and Fst to Network	3	0 - 2^{32}-1	
	TX EFCI 0 Congestion Discard	3	0 - 2^{32}-1	
	TX EFCI 1 Congestion Discard	3	0 - 2^{32}-1	
	TX RM Congestion Discard	3	0 - 2^{32}-1	
	TX OAM Congestion Discard	3	0 - 2^{32}-1	

Multilevel Statistics Supported on the UXM Card

The initial release of the UXM firmware supported only four (4) QE per-channel statistics. To support these new statistics, however, more QE memory, on a per-channel basis, is required. As the statistics level is increased, the number of connections supported by the card may decrease.

Setting the Statistics Level on the UXM Card

Setting the statistics level can only be performed with the UXM in the standby state. See the switch software command **cnfcdparm** for details on how to set the statistics level on the card.

The UXM will retain the last setting and will reboot in that mode. That is, if the statistics were set to 2, the UXM, when reset (reinserted, and so on), will boot with the statistics level set to 2. However, the lowest setting actually set on the card will be the maximum number of statistics with the maximum number of user connections. That is, the UXM can support four ingress and four egress QE stats with 8,000 user connections. This would be the equivalent of the statistics level being set to 1. The cards will accept the full range of statistics levels (0-3). The UXMe (UXM Enhanced card) will support up to statistics level 2 with no reduction in the number of connections. Table 1-8 shows connection counts for the UXM cards when different statistics levels are configured on the card.

Table 1-8 Connection Counts for Various Statistics Levels on UXM

Stats Level	UXM Conns	UXM FP Conns	UXMe Conns	UXMe FP Conns
0	8126	4000	8126	4000
1 (UXM default)	8126	4000	8126	4000
2 (UXMe default)	4031	4000	8126	4000
3	1983	1983	4031	4000

Levels of Support on UXM Card for Various Statistics

If statistics belonging to a statistics level higher than the level set on the card are requested, the user will receive an error message. Table 1-9 shows statistics support under statistics level 1. The **bold** text refers to statistics collected from the QE. Statistics fall into four categories: User, OAM, RM, and All. These categories can be further divided into types. User cells are one of four types: Eof0-EFCI0, Eof1-EFCI0, Eof0-EFCI1, and Eof1-EFCI1. OAM cells come in two types: SEg and E2e. RM cells fall into three types: FRm, BRm, and FsRm. CLP0 and CLP1 cells, when tracked, are distinguished only for user cells.

Table 1-9 Levels of Support That Can Be Configured for Statistics on UXM Card

Ingress Stats	Oid	Level	New	Definition
All Cells from port	0x05	All		
All CLP1 cells from port	0x08	All		
All non compliant cells	0x0E	All		
All CLP0 non compliant cells	0x0F	All		
All CLP1 non compliant cells	0x10	All		
VC queue depth	0x11	All		
All CLP0 cells from port	0x2B	All		
VSVD ACR	0x51	All		
EOF=1 from port	0x06	1->		All cells Eof=1 that arrive at the QE from the port. This includes cells that are discarded due to overflow. Note: For Level 1 this does not include discards due to overflow.
All cells to NW	0x07	1->		Sum of CLP0 and CLP1 cells that arrive at the QE from the port.
CLP0 overflow discards	0x29	1->		All cells with CLP0 that are discarded at the QE due to overflow.
CLP1 overflow discards	0x2A	1->		All cells with CLP1 that are discarded at the QE due to overflow
CLP0 to NW	0x2E	2->	x	All cells with CLP0 that depart from the QE to the NW.
CLP1 to NW	0x30	2->	x	All cells with CLP1 that depart from the QE to the NW.
EFCI=0 to NW	0x34	2->	x	All cells with Efci=0 that depart from the QE to the NW.
EFCI=1 to NW	0x36	2->	x	All cells with Efci=1 that depart from the QE to the NW.
EOF=1 overflow discards	0x0B	2->	x	All cells with Eof=1 that are discarded at the QE due to overflow.
EFCI=0 from port	0x31	3	x	All cells with Efci=0 that arrive at the QE from the port. This includes cells that are discarded due to overflow.

Table 1-9 Levels of Support That Can Be Configured for Statistics on UXM Card (continued)

Ingress Stats	Oid	Level	New	Definition
EFCI=1 from port	0x0C	3	x	All cells with Efci=1 that arrive at the QE from the port. This includes cells that are discarded due to overflow.
OAM cells from port	0x3A	3	x	OAM cells that arrive at the QE from the port. This includes cells that are discarded due to overflow.
Rm cells from port	0x3E	3	x	Rm cells that arrive at the QE from the port. This includes cells that are discarded due to overflow.
FRm to NW	0x17	3	x	FRm cells that depart from the QE to the NW.
BRm+FsRm to NW	0x18	3	x	BRm + FsRm cells that depart from the QE to the NW.
EFCI=0 overflow discards	0x12	3	x	All Efci=0 cells that are discarded at the QE due to overflow.
EFCI=1 overflow discards	0x13	3	x	All Efci=1 cells that are discarded at the QE due to overflow.
OAM overflow discards	0x14	3	x	All OAM cells that are discarded at the QE due to overflow.
RM overflow discards	0x16	3	x	All Rm cells that are discarded at the QE due to overflow.

Table 1-10 Consolidated Ingress Stats (to UXM Card)

Consolidated Ingress Stats	Oid	Part of Which New Stat	New Oid	Stat Grp
Seg OAM from port	0x3A	OAM from port	0x3A	3
End-to-end OAM from port	0x3C	OAM from port	0x3A	3
FRm cells from port	0x3E	Rm cells from port	0x3E	3
BRm+FsRm cells from port	0x40	Rm cells from port	0x3E	3

Table 1-11 Egress Statistics (from UXM Card)

Consolidated Egress Stats	Oid	Part of Which New Stat	New Oid	Stat Grp
FRm from NW	0x3F	Rm from NW	0x3F	3
BRm+FsRm from NW	0x41	Rm from NW	0x3F	3
Seg OAM from NW	0x3B	OAM from NW	0x3B	3
End-to-end OAM from NW	0x3D	OAM from NW	0x3B	3
FRm cells to port	0x09	Rm cells to port	0xA	3
BRm+FsRm cells to port	0x0A	Rm cells to port	0xA	3

Compatibility with 9.1 Classic Statistics

The statistics as defined for level statistics will not provide the same information as statistics on a UXM running 9.1 firmware. However, backward compatibility is provided for any UXM upgraded from 9.1 to 9.2 firmware. UXMs shipped with 9.2 firmware do not support the classic statistics.

Note The **rsh** command can be used to put UXM running 9.2 into classic statistics mode. (Note that you need to have debug level privileges to access this command.) In addition, any UXM upgraded from 9.1 to 9.2 will no longer support classic statistics if a statistics level has been set on the card. The UXMe supports, at a minimum, level 2 stats, and since level 2 statistics supports all the statistics needed for compatibility with 9.1 software.

Refer to Table 1-12 for a list of the multilevel channel statistics supported on the UXM.

Table 1-12 UXM with Multilevel Channel Statistics

Statistics Description	Level	OID Number	Stat Number	Interv	Sum
Cells Received from Port	1	0x05	0x2d	YES	YES
Cells Transmitted to Network	1	0x07	0x2f	YES	YES
Cells Received from Network	1	0x1f	0x30	YES	YES
Cells Transmitted to Port	1	0x22	0x35	YES	YES
EOF Cells Received from Port	1	0x06	0x2e	YES	YES
Cells Received with CLP=1	1	0x08	0x31	YES	YES
Cells Received with CLP=0	1	0x2b	0x37	YES	YES
Non-Compliant Cells Received	1	0x0e	0x32	YES	YES
Average Rx VCq Depth in Cells	1	0x11	0x33	NO	YES
Average Tx Vcq Depth in Cells	1	0x53	0x3b	NO	YES
Ingress Vsvd Allowed Cell Rate	1	0x51	0x39	NO	YES
Egress Vsvd Allowed Cell Rate	1	0x52	0x3a	NO	YES
Cells Rx with CLP=0 from Network	1	0x2d	0x4c	YES	YES
Cells Rx with CLP=1 from Network	1	0x2f	0x4d	YES	YES
Cells Tx with CLP=0 to Port	1	0x2c	0x4e	YES	YES
Cells Tx with CLP=1 to Port	1	0x20	0x4f	YES	YES
Non-Comp Cells Rx w/CLP=0 dropped	1	0x0f	0x50	YES	YES
Non-Comp Cells Rx w/CLP=1 dropped	1	0x10	0x51	YES	YES
Overflow Cells Rx w/CLP=0 dropped	1	0x29	0x52	YES	YES
Overflow Cells Rx w/CLP=1 dropped	1	0x2a	0x53	YES	YES
OAM state (0:OK, 1:FERF, 2:AIS)	1	0x28	0x36	NO	YES
Good Pdu’s Received by the SAR	1	0x60	0x44	YES	YES
Good Pdu’s Transmitted by the SAR	1	0x61	0x45	YES	YES
Rx pdu’s discarded by the SAR	1	0x62	0x46	YES	YES
Tx pdu’s discarded by the SAR	1	0x63	0x47	YES	YES

Table 1-12 UXM with Multilevel Channel Statistics (continued)

Statistics Description	Level	OID Number	Stat Number	Interv	Sum
Invalid CRC32 pdu rx by the SAR	1	0x64	0x48	YES	YES
Invalid Length pdu rx by the SAR	1	0x65	0x49	YES	YES
Shrt-Lgth Fail detected by the SAR	1	0x66	0x4a	YES	YES
Lng-Lgth Fail detected by the SAR	1	0x67	0x4b	YES	YES
Cells Tx with CLP=0 to Network	2	0x2e	0x54	YES	YES
Cells Tx with CLP=1 to Network	2	0x30	0x55	YES	YES
Cells Tx with EFCI=0 to Network	2	0x34	0x56	YES	YES
Cells Tx with EFCI=1 to Network	2	0x36	0x57	YES	YES
Cells Transmitted with EFCI=0	2	0x32	0x38	YES	YES
Cells Transmitted with EFCI=1	2	0x21	0x34	YES	YES
Overflow Cells Rx w/EOF dropped	2	0x0b	0x58	YES	YES
Cells Tx with EOF to Port	2	0x37	0x59	YES	YES
RM Cells Tx to Port	3	0x0a	0x5a	YES	YES
Cells Rx with EFCI=0 from Port	3	0x31	0x5b	YES	YES
Cells Rx with EFCI=1 from Port	3	0x0c	0x5c	YES	YES
OAM Cells Rx from Port	3	0x3a	0x5d	YES	YES
RM Cells Rx from Port	3	0x3e	0x5e	YES	YES
Overflow Cells Rx w/EFCI=0 dropped	3	0x12	0x5f	YES	YES
Overflow Cells Rx w/EFCI=1 dropped	3	0x13	0x60	YES	YES
Overflow OAM Cells Rx and dropped	3	0x14	0x61	YES	YES
Overflow RM Cells Rx and dropped	3	0x16	0x62	YES	YES
Forward RM Cells Tx to Network	3	0x17	0x63	YES	YES
Backward RM + FST Cells Tx to Net	3	0x18	0x64	YES	YES
Cells Rx with EFCI=0 from Network	3	0x33	0x65	YES	YES
Cells Rx with EFCI=1 from Network	3	0x35	0x66	YES	YES
Egress OAM Cells Rx	3	0x3b	0x67	YES	YES
Egress RM Cells Rx	3	0x3f	0x68	YES	YES
Overflow Cells Tx w/EFCI=0 dropped	3	0x19	0x69	YES	YES
Overflow Cells Tx w/EFCI=1 dropped	3	0x1a	0x6a	YES	YES
Overflow RM Cells Tx and dropped	3	0x1b	0x6b	YES	YES
Overflow OAM Cells Tx and dropped	3	0x1c	0x6c	YES	YES

Refer to Table 1-13 for a list for the BXM with no multilevel channel statistics supported.

Table 1-13 BXM Card with No Multilevel Channel Statistics

Statistics Description	Level	OID Number	Stat Number	Interv	Sum
Port Cells Received	n/a	0x05	0x1d	YES	YES
Port Frames Received	n/a	0x06	0x1e	YES	YES
Network Cells Transmitted	n/a	0x07	0x1f	YES	YES
Port Cells Received with CLP=1	n/a	0x08	0x20	YES	YES
Non-Compliant Cells Received (Port)	n/a	0x0e	0x26	YES	YES
Average Rx Q Depth in Cells	n/a	0x11	0x29	YES	YES
Cells Received from Network	n/a	0x1f	0x2e	YES	YES
Cells Transmitted with CLP (Port)	n/a	0x20	0x31	YES	YES
Cells Transmitted (Port)	n/a	0x22	0x2d	YES	YES
Average Tx Q Depth in Cells	n/a	0x53	0x39	YES	YES
Good Pdu's Received by the SAR	n/a	0x60	0x3a	YES	NO
Good Pdu's Transmitted by the SAR	n/a	0x61	0x3b	YES	NO
Rx pdu's discarded by the SAR	n/a	0x62	0x3c	YES	NO
Tx pdu's discarded by the SAR	n/a	0x63	0x3d	YES	NO
Invalid Length pdu rx by the SAR	n/a	0x65	0x3f	YES	NO
Shrt-Lgth Fail detected by the SAR	n/a	0x66	0x40	YES	NO
Lng-Lgth Fail detected by the SAR	n/a	0x67	0x41	YES	NO
Invalid CRC32 pdu rx by the SAR	n/a	0x64	0x3e	YES	NO
Cells Received with Clp 0	n/a	0x2b	0x45	YES	YES
Network Cells Received with Clp 0	n/a	0x2d	0x46	YES	YES
Network Cells Received with Clp 1	n/a	0x2f	0x47	YES	YES
Ingress Vsvd Allowed Cell Rate	n/a	0x51	0x48	YES	YES
Egress Vsvd Allowed Cell Rate	n/a	0x52	0x49	YES	YES
Cells Tx with CLP=0 to Port	n/a	0x2c	0x52	YES	YES
Cells Tx with CLP=0 to Network	n/a	0x2e	0x53	YES	YES
Rx Clp0+1 Port	n/a	n/a	0x54	NO	YES
Rx Clp0 Dscd	n/a	n/a	0x55	NO	YES
Tx Clp0 Dscd	n/a	n/a	0x56	NO	YES
Tx Clp1 Dscd	n/a	n/a	0x57	NO	YES
Tx Clp0+1 Dscd	n/a	n/a	0x58	NO	YES
OAM state (0:OK,1:FERF,2:AIS)	n/a	0x28	n/a	NO	NO

Refer to Table 1-14 for a list of multilevel channel statistics supported on the BXM.

Table 1-14 BXM with Multilevel Channel Statistics

Statistics Description	Level	OID Number	Stat Number	Interv	Sum
Port Cells Received	1	0x05	0x1d	YES	YES
Port Frames Received	1	0x06	0x1e	YES	YES
Network Cells Transmitted	1	0x07	0x1f	YES	YES
Port Cells Received with CLP=1	1	0x08	0x20	YES	YES
Non-Compliant Cells Received (Port)	1	0x0e	0x26	YES	YES
Average Rx Q Depth in Cells	1	0x11	0x29	YES	YES
Cells Received from Network	1	0x1f	0x2e	YES	YES
Cells Transmitted with CLP (Port)	1	0x20	0x31	YES	YES
Cells Transmitted (Port)	1	0x22	0x2d	YES	YES
Average Tx Q Depth in Cells	1	0x53	0x39	YES	YES
Good Pdu's Received by the SAR	1	0x60	0x3a	YES	NO
Good Pdu's Transmitted by the SAR	1	0x61	0x3b	YES	NO
Rx pdu's discarded by the SAR	1	0x62	0x3c	YES	NO
Tx pdu's discarded by the SAR	1	0x63	0x3d	YES	NO
Invalid Length pdu rx by the SAR	1	0x65	0x3f	YES	NO
Shrt-Lgth Fail detected by the SAR	1	0x66	0x40	YES	NO
Lng-Lgth Fail detected by the SAR	1	0x67	0x41	YES	NO
Invalid CRC32 pdu rx by the SAR	1	0x64	0x3e	YES	NO
Cells Received with Clp 0	1	0x2b	0x45	YES	YES
Network Cells Received with Clp 0	1	0x2d	0x46	YES	YES
Network Cells Received with Clp 1	1	0x2f	0x47	YES	YES
Ingress Vsvd Allowed Cell Rate	1	0x51	0x48	YES	YES
Egress Vsvd Allowed Cell Rate	1	0x52	0x49	YES	YES
Cells Tx with CLP=0 to Port	1	0x2c	0x52	YES	YES
Rx Clp0+1 Port	1	n/a	0x54	NO	YES
Tx Clp0 Dscd	1	n/a	0x56	NO	YES
Tx Clp1 Dscd	1	n/a	0x57	NO	YES
Tx Clp0+1 Dscd	1	n/a	0x58	NO	YES
Non-Comp Cells Rx w/CLP=0 dropped	1	0x0f	0x59	YES	YES
Non-Comp Cells Rx w/CLP=1 dropped	1	0x10	0x5a	YES	YES
Overflow Cells Rx w/CLP=0 dropped	1	0x29	0x5b	YES	YES
Overflow Cells Rx w/CLP=1 dropped	1	0x2a	0x5c	YES	YES
OAM state (0:OK,1:FERF,2:AIS)	1	0x28	n/a	NO	NO
Cells Tx with CLP=0 to Network	2	0x2e	0x53	YES	YES
Rx Clp0 Dscd	2	n/a	0x55	NO	YES
Cells Tx with CLP=1 to Network	2	0x30	0x5d	YES	YES

Table 1-14 BXM with Multilevel Channel Statistics (continued)

Statistics Description	Level	OID Number	Stat Number	Interv	Sum
Cells Tx with EFCI=0 to Network	2	0x34	0x5e	YES	YES
Cells Tx with EFCI=1 to Network	2	0x36	0x5f	YES	YES
Cells Transmitted with EFCI=0	2	0x32	0x60	YES	YES
Cells Transmitted with EFCI=1	2	0x21	0x2c	YES	YES
Overflow Cells Rx w/EOF dropped	2	0x0b	0x61	YES	YES
Cells Tx with EOF to Port	2	0x37	0x62	YES	YES
RM Cells Tx to Port	3	0x0a	0x63	YES	YES
Cells Rx with EFCI=0 from Port	3	0x31	0x64	YES	YES
Cells Rx with EFCI=1 from Port	3	0x0c	0x65	YES	YES
OAM Cells Rx from Port	3	0x3a	0x66	YES	YES
RM Cells Rx from Port	3	0x3e	0x67	YES	YES
Overflow Cells Rx w/EFCI=0 dropped	3	0x12	0x68	YES	YES
Overflow Cells Rx w/EFCI=1 dropped	3	0x13	0x69	YES	YES
Overflow OAM Cells Rx and dropped	3	0x14	0x6a	YES	YES
Overflow RM Cells Rx and dropped	3	0x16	0x6b	YES	YES
Forward RM Cells Tx to Network	3	0x17	0x6c	YES	YES
Backward RM + FST Cells Tx to Net	3	0x18	0x6d	YES	YES
Cells Rx with EFCI=0 from Network	3	0x33	0x6e	YES	YES
Cells Rx with EFCI=1 from Network	3	0x35	0x6f	YES	YES
Egress OAM Cells Rx	3	0x3b	0x70	YES	YES
Egress RM Cells Rx	3	0x3f	0x71	YES	YES
Overflow Cells Tx w/EFCI=0 dropped	3	0x19	0x72	YES	YES
Overflow Cells Tx w/EFCI=1 dropped	3	0x1a	0x73	YES	YES
Overflow RM Cells Tx and dropped	3	0x1b	0x74	YES	YES
Overflow OAM Cells Tx and dropped	3	0x1c	0x75	YES	YES

Descriptions for Statistics Fields on cnfcdparm Screen

The field names on the **cnfcdparm** screen are similar to the field names on the **dspchstats** screen. Table 1-15 provides descriptions for fields that appear on the **cnfcdparm** screen. Note that the object names given may vary slightly from what actually appears on the **cnfcdparm** screen fields; similarly, the descriptions for each object (or screen field) correspond in most cases to the related object (or screen field) name, but not in all cases.

Table 1-15 Descriptions for cnfcdparm for BXM Card

Object ID	Object Name	Range/Values	Default	Description
01	Message Tag	Byte 0–3: Tag ID Byte 4–7: IP Address	0	Identifier and source IP address sent with CommBus message. Both will be copied into the response, if any is to be sent.
02	RESERVED			
03	LCN	1 – 64K	R	Identifies which channel to collect statistics.
04	RESERVED			
05	Rx Cells From Port	$0 - 2^{32}$-1	N/A	Number of cells received at the ingress of the connection. [A:ALL, B:ALL] (Note: This count is retrieved from the RCMP chip.)
06	Rx EOFs From Port	$0 - 2^{32}$-1	N/A	Number of EOFs received at the ingress of the connection. [A:ALL, B:12, B:28]
07	Rx Cells to Backplane	$0 - 2^{32}$-1	N/A	Number of cells received at the ingress that were sent to the backplane. [A:ALL, B:ALL]
08	Rx CLP=1 Cells From Port	$0 - 2^{32}$-1	N/A	Number of cells received at the port with CLP=1. [A:ALL, B:ALL] (Note: This count is retrieved from the RCMP chip.)
09–0B	RESERVED			
0C	Rx EFCI=1 Cells From Port	$0 - 2^{32}$-1	N/A	Number of cells received at the port with EFCI=1. [A:28, B:28]
0D	RESERVED			
0E	Non-Compliant Cell Count (Total)	$0 - 2^{32}$-1	N/A	Number of cells received at the ingress of the connection that were non-compliant discarded. [A:ALL, B:ALL]. (Note: This is a 16-bit counter in the hardware— it can wrap in less than a second depending upon non-compliant rate.)
0F	Non-Compliant Cell Count (CLP 0 Only)	$0 - 2^{32}$-1	N/A	Number of CLP 0 cells received at the ingress of the connection that were non-compliant dropped. [A:ALL, B:ALL]. (Note: This is a16-bit counter in the hardware—it can wrap in less than a second depending upon non-compliant rate.)
10	Non-Compliant Cell Count (CLP 1 Only)	$0 - 2^{32}$-1	N/A	Number of CLP 1 cells received at the ingress of the connection that were non-compliant dropped. [A:ALL, B:ALL]. (Note: This is a 16-bit counter in the hardware— it can wrap in less than a second depending upon non-compliant rate.)
11	Ingress VC Q Depth	$0 - 2^{32}$-1	N/A	Current Ingress VC Queue Depth. [A:ALL, B:ALL]
12–14	RESERVED			
15	Rx Rsrc Ovfl Discards	$0 - 2^{32}$-1	N/A	Number of cells received at the port that were discarded due to Resource Overflow. [B:ALL]
16–1E	RESERVED			

Table 1-15 Descriptions for cnfcdparm for BXM Card (continued)

Object ID	Object Name	Range/Values	Default	Description
1F	Tx Cells From Network	$0 – 2^{32}-1$	N/A	Number of cells received from the backplane. [A:ALL, B:ALL]
20	Tx CLP=1 To Port	$0 – 2^{32}-1$	N/A	Number of cells transmitted out the port with CLP=1. [A:ALL, B:12, B:28]
21	Tx EFCI=1 To Port	$0 – 2^{32}-1$	N/A	Number of cells transmitted out the port with EFCI=1. [A:12, A:28, B:12, B:28]
22	Tx Cells To Port	$0 – 2^{32}-1$	N/A	Number of cells transmitted out the port. [A:ALL, B:ALL]
23–26	RESERVED			
27	Loopback RTD Measurement	$0 – 2^{32}-1$	N/A	The Loopback Round Trip Delay measurement in msec. (Still under investigation.) Used to initiate the measurement (Set). The Get is used to get the last measurement known; or zero if now known.
28	Local Ingress Rx State	0: Okay 1: FERF (aka RDI) 2: AIS	0	The OAM connection state. [A:ALL, B:ALL]
29	Rx CLP=0 Congested Discards	$0 – 2^{32}-1$	N/A	Number of CLP=0 Cells received from the port and discarded due to congestion (after the policer). [A:ALL, B:None]
2A	Rx CLP=1 Congested Discards	$0 – 2^{32}-1$	N/A	Number of CLP=1 Cells received from the port and discarded due to congestion (after the policer). [A:ALL, B:None]
2B	Rx CLP=0 Cells From Port	$0 – 2^{32}-1$	N/A	Number of CLP=0 Cells received from the port. [A:ALL, B:ALL] (NOTE: This stat is received from the RCMP.)
2C	Tx CLP=0 Cells To Port	$0 – 2^{32}-1$	N/A	Number of CLP=0 Cells transmitted to the port. [A:ALL, B:12, B:28]
2D	Tx CLP=0 Cells From Backplane	$0 – 2^{32}-1$	N/A	Number of CLP=0 Cells received from the backplane. [A:ALL, B:28]
2E	Rx CLP=0 Cells To Backplane	$0 – 2^{32}-1$	N/A	Number of CLP=0 Cells sent to the backplane. [A:ALL, B:12, B:28]
2F	Tx CLP=1 Cells From Backplane	$0 – 2^{32}-1$	N/A	Number of CLP=1 Cells received from the backplane. [A:ALL, B:28]
30	Rx CLP=1 Cells To Backplane	$0 – 2^{32}-1$	N/A	Number of CLP=1 Cells sent to the backplane. [A:12, A:28, B:12,B:28]
31	Rx EFCI=0 Cells From Port	$0 – 2^{32}-1$	N/A	Number of EFCI=0 Cells received from the port. [A:28, B:28]
32	Tx EFCI=0 Cells To Port	$0 – 2^{32}-1$	N/A	Number of EFCI=0 Cells transmitted to the port. [A:12,A:28, B:12, B:28]
33	Tx EFCI=0 Cells From Backplane	$0 – 2^{32}-1$	N/A	Number of EFCI=0 Cells received from the backplane. [A:28, B:28]

Table 1-15 Descriptions for cnfcdparm for BXM Card (continued)

Object ID	Object Name	Range/Values	Default	Description
34	Rx EFCI=0 Cells To Backplane	$0 – 2^{32}$-1	N/A	Number of EFCI=0 Cells sent to the backplane. [A:12, A:28, B:12, B:28]
35	Tx EFCI=1 Cells From Backplane	$0 – 2^{32}$-1	N/A	Number of EFCI=1 Cells received from the backplane. [A:28, B:28]
36	Rx EFCI=1 Cells To Backplane	$0 – 2^{32}$-1	N/A	Number of EFCI=1 Cells sent to the backplane. [A:12, A:28, B:12, B:28]
37	Tx EOFs to Port	$0 – 2^{32}$-1	N/A	Number of cells with EOF sent to the port. [A:12, A:28, B:28]
38	Tx EOFs from Backplane	$0 – 2^{32}$-1	N/A	Number of EOFs received at the backplane. [B:12, B:28]
39	Rx EOFs to Backplane	$0 – 2^{32}$-1	N/A	Number of cells with EOF sent to the backplane. [B:28]
3A	Rx Segment OAM	$0 – 2^{32}$-1	N/A	Number of Segment OAM cells received at the port. [A:28, B:28]
3B	Tx Segment OAM	$0 – 2^{32}$-1	N/A	Number of Segment OAM cells received at the egress. [A:28, B:28]
3C	Rx End-to-End OAM	$0 – 2^{32}$-1	N/A	Number of End-to-End OAM cells received at the port. [A:28, B:28]
3D	Tx End-to-End OAM	$0 – 2^{32}$-1	N/A	Number of End-to-End OAM cells received at the egress. [A:28, B:28]
3E	Rx Forward RM Cells	$0 – 2^{32}$-1	N/A	Number of Forward RM cells received at the port. [A:28, B:28]
3F	Tx Forward RM Cells	$0 – 2^{32}$-1	N/A	Number of Forward RM cells received at the backplane. [A:28, B:28]
40	Rx Backward RM Cells	$0 – 2^{32}$-1	N/A	Number of Backward RM cells received at the port. [A:28, B:28]
41	Tx Backward RM Cells	$0 – 2^{32}$-1	N/A	Number of Backward RM cells received at the backplane. [A:28, B:28]
42	Rx Optimized Bandwidth Management RM Cells	$0 – 2^{32}$-1	N/A	Number of Optimized Bandwidth Management RM cells received at the port. [B:28]
43	Tx Optimized Bandwidth Management RM Cells	$0 – 2^{32}$-1	N/A	Number of Optimized Bandwidth Management RM cells received at the backplane. [B:28]
44	Rx Undefined RM Cells	$0 – 2^{32}$-1	N/A	Number of Undefined RM cells received at the port. [B:28]
45	Tx Undefined RM Cells	$0 – 2^{32}$-1	N/A	Number of Undefined RM cells received at the backplane. [B:28]
46	Tx Rsrc Ovfl Discards	$0 – 2^{32}$-1	N/A	Number of cells received at the backplane that were discarded due to Resource Overflow. [B:ALL]

Table 1-15 Descriptions for cnfcdparm for BXM Card (continued)

Object ID	Object Name	Range/Values	Default	Description
47	Rx VI Cell Discards	$0 – 2^{32}-1$	N/A	Number of cells received at the port that were discarded because of a full Vi. [B:12, B:28]
48	Tx VI Cell Discards	$0 – 2^{32}-1$	N/A	Number of cells received at the backplane discarded because of a full Vi. [B:12, B:28]
49	Rx QBIN Cell Discards	$0 – 2^{32}-1$	N/A	Number of cells received at the port discarded due to QBIN threshold violation. [B:12, B:28]
4A	Tx QBIN Cell Discards	$0 – 2^{32}-1$	N/A	Number of cells received at the backplane that were disc. due to QBIN threshold violations. [B:12, B:28]
4B	Rx VC Cell Discards	$0 – 2^{32}-1$	N/A	Number of cells received at the port that were disc. due to VC threshold violations. [B:12, B:28]
4C	Tx VC Cell Discards	$0 – 2^{32}-1$	N/A	Number of cells received at the backplane that were discarded due to VC threshold violations. [B:ALL]
4D	Rx Cell Filter Discards	$0 – 2^{32}-1$	N/A	Number of cells received at the port that were discarded due to cell filter action. [B:12, B:28]
4E	Tx Cell Filter Discards	$0 – 2^{32}-1$	N/A	Number of cells received at the backplane that were discarded due to cell filter action. [B:12, B:28]
4F	Rx Illegal Event Cells	$0 – 2^{32}-1$	N/A	Number of cells received at the port that caused an reserved event in the hardware. [B:28]
50	Tx Illegal Event Cells	$0 – 2^{32}-1$	N/A	Number of cells received at the backplane that caused an reserved event in the H/W. [B:28]
51	Ingress VSVD ACR	$0 – 2^{32}-1$	N/A	Ingress VSVD allowed Cell Rate. [A:ALL, B:ALL]
52	Egress VSVD ACR	$0 – 2^{32}-1$	N/A	Egress VSVD allowed Cell Rate. [A:ALL, B:ALL]
53	Egress VC Q Depth	$0 – 2^{32}-1$	N/A	Current Egress VC Queue Depth. [A:ALL, B:ALL]
54	Bkwd SECB	$0 – 2^{32}-1$	N/A	Backward reporting Performance Monitoring Severely Errored Cell Blocks. [A:ALL, B:ALL]
55	Bkwd Lost Cells	$0 – 2^{32}-1$	N/A	Backward reporting Performance Monitoring Lost Cell Count. [A:ALL, B:ALL]
56	Bkwd Misinserted Cells	$0 – 2^{32}-1$	N/A	Backward reporting Performance Monitoring Misinserted Cell Count. [A:ALL, B:ALL]
57	Bkwd BIPV	$0 – 2^{32}-1$	N/A	Backward reporting Performance Monitoring Bipolar Violation Count. [A:ALL, B:ALL]
58	Fwd SECB	$0 – 2^{32}-1$	N/A	Forward reporting Performance Monitoring Severely Errored Cell Blocks. [A:ALL, B:ALL]
59	Fwd Lost Cells	$0 – 2^{32}-1$	N/A	Forward reporting Performance Monitoring Lost Cell Count. [A:ALL, B:ALL]
5A	Fwd Misinserted Cells	$0 – 2^{32}-1$	N/A	Forward reporting Performance Monitoring Misinserted Cell Count. [A:ALL, B:ALL]
5B	Fwd BIPV	$0 – 2^{32}-1$	N/A	Forward reporting Performance Monitoring Bipolar Violation Count. [A:ALL, B:ALL]
5C–5F	RESERVED			

Table 1-15 Descriptions for cnfcdparm for BXM Card (continued)

Object ID	Object Name	Range/Values	Default	Description
60	SAR Good PDUs Rcv	$0 – 2^{32}-1$	N/A	Number of good PDUs received by the SAR. [A:ALL, B:ALL]
61	SAR Good PDUs Xmt	$0 – 2^{32}-1$	N/A	Number of good PDUs transmitted by the SAR. [A:ALL, B:ALL]
62	SAR Rcv PDUs Discarded	$0 – 2^{32}-1$	N/A	Number of PDUs discarded on the ingress by the SAR. [A:ALL, B:ALL]
63	SAR Xmt PDUs Discarded	$0 – 2^{32}-1$	N/A	Number of PDUs discarded on the egress by the SAR. [A:ALL, B:ALL]
64	SAR Invalid CRC PDUs Rcvd	$0 – 2^{32}-1$	N/A	Number of invalid CRC32 PDUs received by the SAR. [A:ALL, B:ALL]
65	SAR Invalid Length PDUs Rcvd	$0 – 2^{32}-1$	N/A	Number of invalid-length PDUs received by the SAR. [A:ALL, B:ALL]
66	SAR Short Length Failures	$0 – 2^{32}-1$	N/A	Number of short-length failures detected by the SAR. [A:ALL, B:ALL]
67	SAR Long Length Failures	$0 – 2^{32}-1$	N/A	Number of long-length failures detected by the SAR. [A:ALL, B:ALL]

Full Name

Configure card parameters

Syntax

cnfcdparm <card slot> <stats_level>

Related Commands

cnfchstats, **dspchstats**

Attributes

Privilege	Jobs	Log	Node	Lock
5	No	No	IGX, BPX	No

Example 1

cnfcdparm 2.1.1.1 1

Description

Configure channel statistics level 1 on BXM card in slot 2, port 1, with VPI/VCI of 1.1.

System Response

```
sw57          TRM   SuperUser       BPX 8620    9.2.30    Date/Time Not Set

Channel Statistics for 2.1.1.1     Cleared: Date/Time Not Set   (\)  Snapshot
MCR: 96000/96000 cps    Collection Time: 0 day(s) 00:01:45      Corrupted: NO
   Traffic      Cells      CLP      Avg CPS   %util  Chan Stat Addr: 30EBB36C
From Port   :         0          0        0       0
To Network  :         0    ---            0       0
From Network:         0          0        0       0
To Port     :         0    ---            0       0

NonCmplnt Dscd:         0  Rx Q Depth    :         0  Tx Q Depth    :         0
Rx Vsvd ACR   :         0  Tx Vsvd ACR   :         0  Bkwd SECB     :         0
Bkwd Lost Cell:         0  Bkwd Msin Cell:         0  Bkwd BIPV     :         0
Fwd SECB      :         0  Fwd Lost Cell :         0  Fwd Msin Cell :         0
Fwd BIPV      :         0

Last Command: dspchstats 2.1.1.1 1


Next Command:
```

Example 2

cnfcdparm 10.2.205.101

Description

Configure channel statistics level 1 on UXM card in slot 10, port 2, with VPI/VCI of 205 and 101.

System Response

```
m2a           TN    SuperUser       IGX 16    9.2.30    May  14 1998 14:19 GMT

Channel Statistics: 10.1.205.101
Collection Time: 0 day(s) 23:02:58                  Clrd:  05/13/98 14:33:00
Type                                      Count     Traffic       Rate (cps)
Cells Received from Port                    82978   From port             0
Cells Transmitted to Network                82978   To network            0
Cells Received from Network                 82978   From network          0
Cells Transmitted to Port                   82978   To port               0
EOF Cells Received from Port                    0
Cells Received with CLP=1                       0
Cells Received with CLP=0                   82978
Non-Compliant Cells Received                    0
Average Rx VCq Depth in Cells                   0
Average Tx Vcq Depth in Cells                   0
Cells Transmitted with EFCI=1                   0
Cells Transmitted with EFCI=0               82978

This Command: cnfcdparm 10.1.205.101 1
```

Table 1-16 cnfcdparm—Parameters

Parameter	Description
slot.port.vpi.vci	Specifies the slot, port, VPI, and VCI on a BXM card.

cnfcdpparm (Configure CVM Card Parameters)

The **cnfcdpparm** command configures parameters for the CVM.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfchts, **dchst**, **cnfecparm**

Syntax

cnfcdpparm <parameter number> <new value>

<parameter number>	Specifies the number of the parameter to change. (See Table 1-17.)
<new value>	Specifies the new value for the parameter.

Function

The **cnfcdpparm** command lets you configure CVM parameters for Modem Detection (MDM), certain reserved debug parameters, and In Frame and Out of Frame (I Frm and O Frm) thresholds for DS0A-type T1 applications. (See the **cnfln** description for information on assigning % Fast Modem on a per-channel basis.) Table 1-17 lists the **cnfcdpparm** parameters. All CVMs in the node are dynamically reconfigured according to the new parameters. When you enter the command, the system prompts for a parameter number, as Figure 1-6 illustrates.

Caution You should consult the Cisco TAC before changing any of these parameter.

Figure 1-6 cnfcdpparm—Parameters

```
pubsigx1       TN    SuperUser       IGX 32    9.2 Oct. 20 1998 18:06 PDT

1   MDM Low  Pwr Thrsh      [3160] (H)  15  0 Frm 4.8 Thrsh (msecs) [ 500] (D)
2   MDM Stationary Coef.    [  14] (H)  16  I Frm 9.6 Thrsh (msecs) [ 500] (D)
3   MDM ZCR High Frq Thrsh  [  5A] (H)  17  O Frm 9.6 Thrsh (msecs) [ 500] (D)
4   MDM ZCR Low  Frq Thrsh  [  56] (H)
5   MDM Detect Failure Cnt  [   4] (H)
6   MDM Detect Window Min.  [  39] (H)
7   MDM Detect Silence Max. [  24] (H)
8   MDM Pkt Header          [   6] (D)
9   Null Timing Pkt Header  [   4] (D)
10  Debug Parm A            [   0] (H)
11  Debug Parm B            [   0] (H)
12  I Frm 2.4 Thrsh (msecs) [ 500] (D)
13  O Frm 2.4 Thrsh (msecs) [ 500] (D)
14  I Frm 4.8 Thrsh (msecs) [ 500] (D)

This Command: cnfcdpparm


Which parameter do you wish to change:
```

Table 1-17 cnfcdpparm—Parameters and Descriptions

No.	Parameter	Description	Default[1]
1	MDM Low Power Threshold	Power level for Modem Detect high-range threshold.	3160 (H)
2	MDM Stationary Coefficient	Indicates how rapidly the power level is changing to not be detected as modem.	14 (H)
3	MDM ZCR High Freq Threshold	Defines upper frequency value for 2100 Hz tone used in V.25 modem detection.	5A (H)
4	MDM ZCR Low Freq Threshold	Defines lower frequency value for 2100 Hz tone used in V.25 modem detection.	56 (H)
5	MDM Detect Failure Count	Defines number of failures above which fast modem is not declared.	4 (H)
6	MDM Detect Window Min.	Number of 5.25-milliseconds windows used in modem tests.	39 (H)
7	MDM Detect Silence Max.	Amount of time a channel stays in a modem-detected state. The parameter equals the value you enter times 84 milliseconds. Default=1008 milliseconds.	C (H)
8	MDM Pkt Header	Changes packet type from voice to non-time-stamped for modems.	6 (D)
9	Null Timing Pkt Header	Gives a higher priority to the specified number of voice packets to decrease delay for spurts of talking.	4 (D)
10	Debug Parameter A	A reserved engineering debug parameter. This parameter does not actually go to the card.	0 (H)
11	Debug Parameter B	A reserved engineering debug parameter. This parameter does not actually go to the card.	0 (H)
12	I Frm 2.4 Threshold(msecs)	Specifies In Frame threshold for DS0 2.4 Kbps overhead data channel.	500 (D)

Table 1-17 cnfcdpparm—Parameters and Descriptions (continued)

No.	Parameter	Description	Default[1]
13	O Frm 2.4 Threshold (msecs)	Specifies Out of Frame threshold for DS0 2.4 Kbps overhead data channel.	500 (D)
14	I Frm 4.8 Threshold (msecs)	Same as 19 for DS0 4.8 Kbps channel.	500 (D)
15	O Frm 4.8 Threshold(msecs)	Same as 20 for DS0 4.8 Kbps channel.	500 (D)
16	I Frm 9.6 Threshold(msecs)	Same as 19 for DS0 9.6 Kbps channel.	500 (D)
17	O Frm 9.6 Threshold (msecs)	Same as 20 for DS0 9.6 Kbps channel.	500 (D)

1. Enter value in either decimal (D) or hexadecimal (H).

cnfcftst (Configure Communication Fail Test Pattern)

The **cnfcftst** command changes the test pattern for communication failure testing.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

dspcftst

Syntax

cnfcftst

Function

The communication fail test pattern is used to periodically test for failure of nodes to communicate with each other. This test pattern is also used to recover from communication fail conditions. A communication fail is defined as a loss of controller communication over one or more trunks to a particular node. A communication fail differs from a communication break condition in that the node may be reachable over other paths. The communication fail test is used to test the failed trunk for proper controller traffic.

This command allows the user to configure the communication fail test pattern byte by byte. It defaults to a pattern of 4 bytes of 1s followed by 4 bytes of 0s. Varying the length of the test pattern makes the communications test more or less rigorous. Changing the characters determines the pattern sensitivity for strings of less than 14 bytes.

The **dspcftst** command displays the current communication test pattern. The parameters used for declaring and clearing communication fails are set by the **cnfnodeparm** command. Figure 1-7 illustrates a typical screen.

Figure 1-7 cnfcftst—Configure Communication Fail Test Pattern

```
pubsigx1       TN    SuperUser       IGX 32    9.2       Feb 24 1998 21:17 GMT

Comm Fail Test Pattern

==> Byte  0: FF     Byte 12: 00     Byte 24: FF     Byte 36: 00     Byte 48: FF
    Byte  1: FF     Byte 13: 00     Byte 25: FF     Byte 37: 00     Byte 49: FF
    Byte  2: FF     Byte 14: 00     Byte 26: FF     Byte 38: 00     Byte 50: FF
    Byte  3: FF     Byte 15: 00     Byte 27: FF     Byte 39: 00     Byte 51: FF
    Byte  4: 00     Byte 16: FF     Byte 28: 00     Byte 40: FF     Byte 52: 00
    Byte  5: 00     Byte 17: FF     Byte 29: 00     Byte 41: FF     Byte 53: 00
    Byte  6: 00     Byte 18: FF     Byte 30: 00     Byte 42: FF     Byte 54: 00
    Byte  7: 00     Byte 19: FF     Byte 31: 00     Byte 43: FF     Byte 55: 00
    Byte  8: FF     Byte 20: 00     Byte 32: FF     Byte 44: 00     Byte 56: FF
    Byte  9: FF     Byte 21: 00     Byte 33: FF     Byte 45: 00     Byte 57: FF
    Byte 10: FF     Byte 22: 00     Byte 34: FF     Byte 46: 00     Byte 58: FF
    Byte 11: FF     Byte 23: 00     Byte 35: FF     Byte 47: 00     Byte 59: FF

This Command: cnfcftst

Enter Byte 0:
```

cnfchstats (Configure Channel Statistics Collection)

Use the **cnfchstats** command to enable statistics collection for various channel parameters. The **cnfchstats** command is sometimes referred to as an “interval statistics” command—the statistics information collected is propagated to Cisco WAN Manager.

In Release 9.2, the multilevel channel statistics feature provides additional levels of statistics (levels 2 and 3) beyond level 1 statistics. To configure the channel statistics level on the BXM and UXM card, use the **cnfcdparm** command. This command lets you configure a specific card slot to support additional levels of statistics (levels 2 and 3) that were supported in releases previous to Release 9.2 (level 1). See the **cnfcdparm** command for more information.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

dspchstatcnf, **cnfdparm**, **dspchstathist**, **cnfchanstats**

Syntax

cnfchstats <channel> <stat> <interval> <e | d> [<samples> <size> <peaks>] [nodename]

<channel>	Specifies the channel (connection) to configure.
<stat>	Specifies the type of statistic to enable/disable. (See Table 1-18.)
<interval>	Specifies the time interval of each sample (1–255 minutes).
<e|d>	Enables/disables a statistic. E to enable; D to disable a statistic.
[samples]	Specifies the number of sample to collect (1–255).
[size]	Specifies the number of bytes per data sample (1, 2 or 4).
[peaks]	Enables/disables the collection of one-minute peaks. Y to enable; N to disable.
[nodename]	Specifies the name of the node to which the Cisco WAN Manager terminal connects.

Function

This debug command enables statistics collecting for channel parameters. Table 1-18 lists the statistics by type. Not all statistic types are available for all connections. Only valid statistics are displayed for you to select; inapplicable statistics appear in gray. If you are unsure of the size parameter to specify, select four bytes per sample.

The **dspchstatcnf** command displays the channel statistics configuration. Statistics are collected by and displayed on the Cisco WAN Manager workstation. Cisco WAN Manager allows statistics collection to be customized. You can disable a Cisco WAN Manager-enabled channel statistic by specifying the optional node name of the workstation as the last parameter on the command line. Figure 1-8 illustrates the parameters available for a typical connection.

Figure 1-8 cnfchstats—Configure Channel Statistics

```
 sw199          TN    SuperUser       IGX 8420    9.2    Aug. 28 1998 09:28 PDT

Channel Statistic Types

46) Cells Received from Port           60) Average Tx Vcq Depth in Cells
47) EOF Cells Received from Port       61) Bkwd Severely Errored Cell Blocks
48) Cells Transmitted to Network       62) Bkwd Lost Cell Count
49) Cells Received from Network        63) Bkwd Misinserted Cell Count
50) Cells Received with CLP=1          64) Bkwd Bipolar Violation Count
51) Non-Compliant Cells Received       65) Fwd Severely Errored Cell Blocks
52) Average Rx VCq Depth in Cells      66) Fwd Lost Cell Count
53) Cells Transmitted with EFCI=1      67) Fwd Misinserted Cell Count
54) Cells Transmitted to Port          68) Fwd Bipolar Violation Count
56) Cells Received with CLP=0          69) Good Pdu's Received by the Sar
57) Cells Transmitted with EFCI=0      70) Good Pdu's Transmitted by the Sar
58) Ingress Vsvd Allowed Cell Rate     71) Rx pdu's discarded by the Sar
59) Egress Vsvd Allowed Cell Rate      72) Tx pdu's discarded by the Sar



sw199          TN    SuperUser       IGX 8420    9.2    Aug. 28 1998 09:28 PDT

Channel Statistic Types

73) Invalid CRC32 pdu rx by the sar
74) Invalid Length pdu rx by the sar
75) Shrt-Lgth Fail detected by the sar
76) Lng-Lgth Fail detected by the sar






This Command: cnfchstats 9.2.1.100


Statistic Type:
```

Table 1-18 Channel Statistics

Statistic Number	Statistic Type
1	Frames Received
2	Receive Frames Discarded
3	Frames Transmitted
4	Transmit Frames Discarded

Table 1-18 Channel Statistics (continued)

Statistic Number	Statistic Type
5	Packets Received
6	Receive Packets Discarded
7	Packets Transmitted
8	Projected Packets Transmitted
9	Supervisory Packets Transmitted
10	Bytes Received
11	Receive Bytes Discarded
12	Bytes Transmitted
13	Transmit Bytes Discarded
14	Seconds V.25 Modem On
15	Seconds DSI Enabled
16	Seconds Off-Hook
17	Seconds In Service
18	Frames Transmitted with FECN
19	Frames Transmitted with BECN
20	Supervisory Packets Received
21	Minutes Congested
22	DE Frames Received
23	DE Frames Transmitted
24	DE Frames Dropped
25	DE Bytes Received
26	Frames Received in Excess of CIR
27	Bytes Received in Excess of CIR
28	Frames Transmitted in Excess of CIR
29	Bytes Transmitted in Excess of CIR
32	Rx Frames Discarded—Deroute/Down
33	Rx Bytes Discarded—Deroute/Down
34	Rx Frames Discarded—VC Queue Overflow
35	Rx Bytes Discarded—VC Queue Overflow
36	Tx Frames Discarded—Queue Overflow
37	Tx Bytes Discarded—Queue Overflow
38	Tx Frames Discarded—Ingress CRC
39	Tx Bytes Discarded—Ingress CRC
40	Tx Frames Discarded—Trunk Discard
41	Tx Bytes Discarded—Trunk Discard
42	TX Frames During Ingress LMI Fail

Table 1-18 Channel Statistics (continued)

Statistic Number	Statistic Type
43	TX Bytes During Ingress LMI Fail
44	Unkn Prot Frms Dscd at Ingress
45	Unkn Prot Frms Dscd at Egress
46	Cells Received from Port
47	EOF Cells Received from Por
48	Cells Transmitted to Network
49	Cells Received from Network
50	Cells Received with CLP=1
51	Non-Compliant Cells Received
52	Average Rx VCq Depth in Cells
53	Cells Transmitted with EFCI=1
54	Cells Transmitted to Port
56	Cells Received with CLP=0
57	Cells Transmitted with EFCI=0
58	Ingress Vsvd Allowed Cell Rate
59	Egress Vsvd Allowed Cell Rate
60	Average Tx Vcq Depth in Cells
61	Bkwd Severely Errored Cell Blocks
62	Bkwd Lost Cell Count
63	Bkwd Misinserted Cell Count
64	Bkwd Bipolar Violation Count
65	Fwd Severely Errored Cell Blocks
66	Fwd Lost Cell Count
67	Fwd Misinserted Cell Count
68	Fwd Bipolar Violation Count
69	Good pdu's Received by the SAR
70	Good pdu's Transmitted by the SAR
71	Rx pdu's discarded by the SAR
72	Tx pdu's discarded by the SAR
73	Invalid CRC32 pdu rx by the SAR
74	Invalid Length pdu rx by the SAR
75	Invalid Length pdu rx by the SAR
76	Lng-Lgth Fail detected by the SAR

cnfchts (Configure Channel Timestamp)

The **cnfchts** command configures a pre-aging parameter for data channels. Applicable cards are the SDP, LPD, LDM, and HDM. Applicable traffic is time-stamped data.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX	Yes

Associated Commands

cnfcdpparm

Syntax

cnfchts <channel(s)> <pre-age>

<channel(s)>	Specifies the data channel.
<pre-age>	Specifies a value in 250-microsecond increments to go in the age field in the header of a time-stamped packet.

Function

This command configures the pre-age parameter for data channels. The pre-age parameter specifies the initial age of a time-stamped packet. With a non-zero pre-age, the packet has less time to wait at the destination before it reaches the Max Time-Stamped Packet Age and is taken out of the ingress queue. (Data channels with the greater pre-age value are processed sooner.) However, if the pre-age value is too high because of queuing delays in the network, packets could be discarded because they appear too old at the destination.

The value you enter for pre-age should be a multiple of 250 microseconds (otherwise, the system rounds the value down to the nearest multiple of 250 microseconds). The default value is 0. Acceptable values are in the range 0 to the Max Time Stamped Packet Age (set by the **cnfsysparm** command). After you change a time-stamp, the connection should be rerouted or restarted for the new value to take effect.

Note You can see the value for pre-age in the screen display for the **dspchcnf** command. If **dspchcnf** is entered at a user-privilege level below SuperUser level, the pre-age parameter does not appear in the **dspchcnf** output.

Example

```
pubsipx1       TN     SuperUser       IGX 8420    9.2    Aug. 14 1998 03:50 GMT

            Maximum EIA     %      DFM Pattern     DFM        PreAge
Channels    Update Rate    Util      Length       Status      (usec)
3.1               2        100         8         Enabled        1000
3.2-4             2        100         8         Enabled           0









Last Command: cnfchts 3.1 1000


Next Command:
```

cnfclnparm (Configure Circuit Line Parameter)

The **cnfclnparm** command configures the alarm integration time for circuit lines originating on a UVM, CDP or CVM and for T1/E1 Frame Relay circuits originating on an FRP, FRM, or UFM.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfclnsigparm, **dchst**

Syntax

cnfclnparm <line>

<line>	Specifies the circuit line to configure.

Function

This command configures the circuit line alarm integration times for RED and YELLOW circuit line alarms. These integration times are specified in milliseconds and should be set to correspond to the local carrier's alarm integration times. Carrier integration times are typically 800 to 1500 ms. for RED Alarm and 1500 to 3000 ms. for YELLOW Alarm. The allowable range for these parameters are 60 to 3,932,100 ms. When you enter this command, the system responds with the screen in Figure 1-9.

Figure 1-9 cnfcln—Configure Circuit Line Alarm Integration Times

```
gamma         TRM       SuperUser        Rev: 9.2  Aug. 14 1998  14:27 PDT

CLN 11 Parameters
 1  Red Alarm - In/Out  [  1000 /   2000] (Dec)
 2  Yel Alarm - In/Out  [  1000 /   2000] (Dec)









This Command: cnfclnparm 11


Which parameter do you wish to change:
```

cnfclnsigparm (Configure Circuit Line signaling Parameters)

The **cnfclnsigparm** command configures signaling parameters for a UVM or CVM.

Note The CVM & UVM Heartbeat parameter (option 1) is the rate, in seconds, at which the card sends a signaling (ABCD bits) state update to the other end of the connection, even when there is no change in the state of the signaling bits. This is done because signaling packets are time-stamped data packets, and there is a small chance that a signaling packet might be discarded somewhere in the network. This mechanism is a recovery mechanism to ensure that on-hook and off-hook notifications are not lost.

Increasing this interval will probably have no impact as long as none of the normal signaling time-stamped data packets are being discarded in the network.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Attributes

Jobs: No Log: Yes Lock: Yes Node Type: IGX

Associated Commands

cnfclnparm, **dspsig**

Syntax

cnfclnsigparm <parameter number> <parameter value>

<parameter number>	Specifies the parameter number of the signaling parameter to change.
<parameter value>	Specifies the new value to enter.

Function

The **cnfclnsigparm** command configures any of the UVM, CVM circuit line signaling parameters associated with the node. See Table 1-19 for the parameters and their values.

When you enter this command, the system responds with the display as shown in Figure 1-10.

Figure 1-10 cnfclnsigparm—Configure Circuit Line signaling Parameters

```
sw219          TRM   SuperUser       IGX 8420  9.2.a8    Apr. 22 1999 08:12 GMT

1  CVM & UVM Heartbeat                     [   2] (sec)
2  CVM & UVM Sig. Polling Rate             [  10] (sec)
3  CVM & UVM Default Inband Sig Delay      [  96] (msec)
4  CVM & UVM Default Inband Playout Delay  [ 200] (msec)
5  CVM & UVM Default Pulse Sig Delay       [  96] (msec)
6  CVM & UVM Default Pulse Playout Delay   [ 200] (msec)
7  CVM & Number of Packet Slices           [   1]
8  CVM & UVM Packet Rate                   [ 200] (pkt/sec)
9  CVM & UVM Condition E1 CCS Lines?       [  NO]
10 CVM & UVM Default Inband Min. Wink      [ 140] (msec)
11 CVM & UVM Default Pulse Min. Wink       [ 140] (msec)
12 CVM & UVM Condition T1 Lines?           [ YES] (yes/no)




Last Command: cnfclnsigparm


Which parameter do you wish to change:
```

Table 1-19 cnfclnsignparm—Parameters and Descriptions

No.	Parameter	Description	Range
1	Heartbeat	The current state of the signaling is periodically transmitted to the far end even if no signaling transitions are detected. This interval is determined by the value of "heartbeat." The CVM & UVM Heartbeat parameter (option 1) is the rate, in seconds, at which the card sends a signaling (ABCD bits) state update to the other end of the connection, even when there is no change in the state of the signaling bits. This is done because signaling packets are time-stamped data packets, and there is a small chance that a signaling packet might be discarded somewhere in the network. This recovery mechanism ensures that on-hook and off-hook notifications are not lost. Increasing this interval will probably have no impact as long as none of the normal signaling time-stamped data packets are being discarded in the network.	2–30 sec.
2	Signal Polling Rate	How often the control card polls the UVM/CVM for the status of the signaling. This parameter is used to update displays and statistics.	2–60 sec.
3	Default Inband Signal Delay	The transmit buffer timer value set after a valid signaling transition for in-band signaling arrives. After timeout, a signaling packet is sent.	30–96 msec.
4	Default Inband Playout Delay	The receive buffer timer that "ages" an incoming, time-stamped packet. When the age of the packet reaches the time-stamp value, it moves on to depacketization and then to the user equipment. This parameter is used to even out the delay between signaling packets and voice packets.	0–200 msec.
5	Default Pulse Signal Delay	Same as number 3 but applied to pulse signaling.	30–96 msec.
6	Default Pulse Playout Delay	Same as number 4 but applied to pulse signaling.	100–200 msec.

Table 1-19 cnfclnsignparm—Parameters and Descriptions (continued)

No.	Parameter	Description	Range
8	Packet Rate	Reserves trunk bandwidth for carrying UVM/CVM signaling.	0–1000 packets/sec.
9	Condition CCS Lines	If you specify "yes" for this parameter, the card applies signaling conditioning during an alarm to all channels on E1 CCS circuit lines to notify marked for Common Channel signaling to notify PBX of a line failure.	YES or NO
10	Inband Min. Wink	Same as 6 for in-band signaling.	120–300 msec.
11	Pulse Min. Wink	For UVM/CVM connections only, this parameter controls both wink and inter-digit intervals for signaling that arrives over the NPC or NPM signaling channel from a far end UVM/CVM.	120–300 msec.
12	Condition T1 Lines?	If you specify "yes" for this parameter, the card applies signaling conditioning during an alarm to all channels on T1 circuit lines to notify PBX of a line failure.	YES or NO

cnfcmparm (Configure Connection Management Parameters)

The **cnfcmparm** command configures various connection management parameters for the node.

The **cnfcmparm** command is used to enable cost-based route selection and the use of delay as the trunk cost. By default, delay is enabled. This worst-case delay for each connection type is calculated from the configured voice and non-time-stamped trunk queue depths. For delay sensitive connections on the IGX (voice and non-time-stamped), the worst-case trunk delay can be used as the per-trunk cost. For delay sensitive connections on the BPX (ATM CBR), end-to-end delay is not used as a routing constraint in AutoRoute.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

dsprrst, **cnftlparm**

Syntax

cnfcmparm <parameter number> <value>

<parameter number>	Specifies the number of the parameter to change. See Table 1-20
<value>	Specifies the new parameter value to enter.

Function

This command configures parameters that affect Adaptive Voice, Rerouting, and Courtesy Up/Down. These parameters are used only at the local node. Table 1-20 lists the parameters, their descriptions, and their default values.

Table 1-20 Connection Management Parameters

No.	Parameter	Description	Range	Default
1	Normalization Interval	The time delay in minutes between attempts to disable VAD (that is, to “normalize”) on groups of voice connections. It is in force once the network has been stable for a while (see parameter 4, “Setting Interval”).	1–10 minutes	2
2	Max Number To Normalize	The maximum number of connections that may be normalized at each normalization interval (see parameter 1).	1–50 connections	5 connections
3	Normalization Logging	This boolean specifies whether changes in VAD status are recorded in the event log.	y=yes n=no	No
4	Settling Interval	The length of time, in minutes, following a disturbance in the network (trunk failure, and so on) before normalization attempts are allowed.	1–10 minutes	4 minutes

Table 1-20 Connection Management Parameters (continued)

No.	Parameter	Description	Range	Default
5	Minimum Open Space	The minimum trunk bandwidth required, in packets/second, before normalization attempts are allowed. This is in addition to the statistical reserve for the trunk. Increasing this parameter causes all connections in the network to reroute (although the parameter governs only the local node).	0–8000 packets per second (pps)	1000 pps
6	Normalization Priority	Determines the order in which connections are considered for VAD removal. It may be Class of Service (CoS) or load. While CoS is a simple test, the load option is more complex. The load, in packets/second, over the last “Load Sample Period” (see parameter 7) for all eligible connections (with or without VAD) is sampled. For every “Normalization Interval” (see parameter 1), the IGX node takes the “Max Number To Normalize” (see parameter 2) connections with VAD applied and compares their utilization with those with VAD already disabled. Those with the greatest load will have VAD disabled, if necessary, at the expense of some that were already disabled, where VAD is now applied. In this way, the most heavily used connections are continually found and have VAD disabled.	COS or Load (c/l)	l (Load)
7	Load Sample Period	The period during which voice activity is sampled for load determination if parameter 6 is set to Load.	1–10 minutes	4 minutes
8	Maximum Routing Bundle	For rerouting, the maximum number of connections allowed in a routing request. For derouting, the maximum number of connections chosen using the CoS-based criterion. The value of this parameter should be set to less than that of parameter 21. A larger value provides a faster rerouting/derouting time. A smaller value provides better load balancing.	1–250	90
9	Reroute Timer	The number of seconds since the last reroute to wait before attempting another reroute of the same connection. After a connection has been successfully routed, it does not get rerouted again (especially for a connection that has previously experienced a failure at its preferred route) until this amount of time has elapsed. The time delay permits the preferred route to stabilize its operational status before a working connection with a preferred route is returned to the preferred route. A zero timer means the request is re-attempted immediately.	0–900 seconds	0 seconds
10	Timer Reset on Line Fail	This boolean specifies that the reroute timer in parameter 9 can be ignored if the current route actually fails (instead of attempting a rerouting of working connections on non-preferred routes).	y=yes n=no	y
11	Max Down/Up Per Pass	The maximum number of connections allowed to be upped or downed per pass. A larger value provides a faster completion of state update notifications, at the expense of potentially flooding the network. A smaller value provides better control of network traffic, but at the expense of prolonged state update notifications.	0–255	50

Table 1-20 Connection Management Parameters (continued)

No.	Parameter	Description	Range	Default
12	Down/Up Timer	The amount of time to wait before the next pass of upping/downing connections. A larger value provides slower-paced state update notifications, thus allowing time for the node to process other requests. A smaller value provides faster-paced state update notifications.	1000–65535 msecs	30000 msecs
13	Maximum Route Errors per Cycle	The maximum number of failed rerouting attempts allowed for a connection. Once this threshold has been reached, the connection is removed from the reroute group (see parameters 25, 26, and 27) and placed in a block waiting for the next cycle. (See also parameters 14 and 15.) A larger value provides a more resilient rerouting attempt. A smaller value allows a faster declaration of rerouting failure.	0–65535 failures	BPX: 50 IGX: 200
14	Maximum Time Between Routing Cycles	All connections that have waited for this amount of time are allowed to be returned into the reroute group. The expiration of this timer starts off another cycle of rerouting attempts. (See also parameters 13 and 15.) A larger value provides more time for the network topology to settle before re-attempting a connection reroute. A smaller value allows more frequent reroute attempts.	1–8 minutes	5 minutes
15	Maximum Routing Error Cycles	The maximum number of cycles of rerouting attempts. Once this threshold has been reached, the connection is declared failed. You must use the **rrtcon** command to reroute the failed connection. (See also parameters 13 and 14.) Alternatively, the failed connection is rerouted when the BCC becomes active (for example, due to card reset or **switchcc**). A larger value provides a more resilient rerouting attempt. A smaller value allows a faster declaration of rerouting failure.	0–255 cycles	BPX: 10 IGX: 1
16	Routing pause timer	The amount of time to wait before the next rerouting attempt. Do not wait when set to 0. A larger value provides a slower-paced rerouting attempt, taking advantage of possible network topology updates. A smaller value allows for a faster-paced rerouting attempt that does not depend on the changing network topology.	0–65535 msecs	0
17	Max. messages sent per update	The maximum number of CMUPDATE messages that may be sent into the network without acknowledgement. This parameter permits the transmitting node to throttle the networking traffic to prevent jamming. A larger value allows the broadcasting to complete faster, at the risk of jamming the network. A smaller value slows down the broadcasting without flooding the network, but at the expense of more broadcasting iterations.	0–223 decimal	10

Table 1-20 Connection Management Parameters (continued)

No.	Parameter	Description	Range	Default
18	Send SVC urgent msgs	IGX only. This parameter enables an IGX node to inform each via node to remove an SVC connection during deletion. When disabled, the via nodes are not immediately informed through an update message. This causes the trunk loading occupied by a deleted SVC to remain unavailable until the update message is received by the via node.	y=yes n=no	BPX: n IGX: y
19	Max SVC Retry	IGX only. The maximum number of failed routing attempts before the SVC connection is declared failed. If the routing attempt fails due to a reason other than being “blocked,” the connection is immediately declared failed. A blocked attempt means that the routing state machine on the via/slave node is already processing a route request, or is locked by some other state machines. A larger value provides a more resilient SVC rerouting attempt. A smaller value allows a faster declaration of rerouting failure.	0–30 decimal	0
20	Wait for TBL updates	After routing all connections based on CoS, wait roughly this amount of time before the routing of other connections in need of rerouting (for example, those failed connections due to lack of critical internal resources). This delay allows the topology to settle after the CoS-based rerouting phase. This wait period should typically be one or two seconds longer than the time specified by the Fast Interval parameter (default 5 seconds) of the **cnftlparm** command.	0–65000 decimal	70 (x100 msecs)
21	Max derouting bundle	The maximum number of connections chosen based on load, that can be derouted concurrently. The value of this parameter should be set to greater than that of parameter 8. The actual number of connections concurrently derouted can reach the sum of this parameter and of parameter 8. A larger value provides a faster rerouting/derouting time. A smaller value provides better load balancing.	0–16000 decimal	500
22	Enable cost-based routing	This boolean specifies whether the cost-based routing algorithm should be used in preference to the hop-based routing algorithm. Yes means enable cost-based routing. Cost-based routing allows the network operation to better tune the network utilization based on the least cost. Hop-based routing is a simpler algorithm that selects a path strictly based on the least number of hops.	y=yes n=no	n
23	Enable route cache usage	This boolean specifies whether the most recent successfully used routes are to be placed in cache in order to avoid performing route selection. Yes enables route cache usage. The cache route can be either a cost-based route or a hop-based route.	y=yes n=no	n
24	Use delay for routing	This boolean specifies whether queuing delay is considered in the cost-based routing algorithm. Yes means use delay for routing. The parameter is particular useful for time-sensitive or voice connections.	y=yes n=no	n

Table 1-20 Connection Management Parameters (continued)

No.	Parameter	Description	Range	Default
25	# of reroute groups used	Specifies the number of reroute groups allowed for the node. Each reroute group is categorized based on the load requirement for each connection. The node reroutes connections with the highest load units first and proceeds with successively decreasing load unit ranges. A larger value provides more groups at the cost of more iterations stepping through the reroute groups during rerouting. A smaller value provides a faster completion of the iterations.	1–200 groups	50
26	Starting size of RR groups	The first reroute group is defined to consist of connections with load units at or below this parameter value. During rerouting, connections from this reroute group are considered last. Connections with load units above this value but at or below the sum of this value and that of the next parameter (increment between RR groups) are placed in the second reroute group. A larger value provides a bigger range of bandwidth for the first reroute groups. A smaller value provides a more refined range of bandwidth included in the first reroute group.	0–96000 cell load units (CLUs)	0 CLUs
27	Increment between RR groups	Each of the remaining reroute groups is defined to consist of connections with load units higher than the previous reroute group, but at or below the sum of the previous reroute group threshold and this parameter value. The last reroute group can accommodate any load units above the second-last reroute group threshold. (See parameter 26 for a definition of the first reroute group.) A larger value provides a bigger range of bandwidth for each of a smaller number of reroute groups. A smaller value provides a smaller range of bandwidth for each of a larger number of reroute groups.	1–96000 cell load units (CLUs)	100 CLUs

Example

Figure 1-11 shows the two screens required to display all **cnfcmparm** parameters.

Figure 1-11 cnfcmparm—parameters

```
sw116          TRMStrataComBPX          BPX 8620    9.2.z   July 29 1999 11:55 PST

1  Normalization Interval    [    2] (D)
2  Max Number To Normalize   [    5] (D)
3  Normalization Logging     [   No]
4  Settling Interval         [    4] (D)
5  Minimum Open Space        [ 1000] (D)
6  Normalization Priority    [ Load]
7  Load Sample Period        [    4] (D)
8  Maximum Routing Bundle    [   90] (D)
9  Reroute Timer             [    0] (secs)
10 Reset Timer on Line Fail  [  Yes]
11 Max Down/Up Per Pass      [   50] (D)
12 Down/Up Timer             [30000] (msecs)
13 Max Route Errs per cycle  [   50] (D)
14 Time between Rrt cycles   [    5] (mins)
15 Max. Rrt Err cycles       [   10] (D)

This Command: cnfcmparm


Continue? y

sw116          TRMStrataComBPX          BPX 8620    9.2.z   July 29 1999 11:55 PST

16 Routing pause timer       [    0] (msecs)
17 Max msgs sent per update  [   10] (D)
18 Send SVC urgent msg       [   No]
19 Max SVC Retry             [    0] (D)
20 Wait for TBL Updates      [   70] (100 msecs)
21 Max Derouting Bndl (0=all)[  500] (D)
22 Enable Cost-Based Routing [   No]
23 Enable Route Cache Usage  [   No]
24 Use Delay for Routing     [   No]
25 # of reroute groups used  [   50] (D)
26 Starting size of RR grps  [    0] (CLU)
27 Increment between RR grps [  100] (CLU)




This Command: cnfcmparm


Enter parameter index:
```

cnfdiagparm (Configure Diagnostic Test Parameters)

The **cnfdiagparm** command sets various diagnostic test parameters for the nodes.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnftstparm

Syntax

cnfdiagparm

Function

This command sets several parameters that affect the three IGX/BPX automatic diagnostic tests. Use this command to set test parameters on the internal system clock. Table 1-21 lists the parameters, their descriptions, and their default values.

Table 1-21 cnfdiagparm—Parameters

No.	Parameter *	Description	Default *
1	VDP Test Frequency **Note** This parameter is OBSOLETE.	Interval between VDP background tests (in seconds).	50
2	LDP tstport delay	Seconds delayed before test data is sent.	10
3	System clock drift (8.192 MHz)	Range of allowable drift of system clock.	±480
4	UEC-B’s PLL railing (8.192 MHz) **Note** NOTE: This parameter is OBSOLETE.	Range of UEC-B's phase lock loop rail.	± 2720
5	NPC/NPM PLL Min. (8.192 MHz)	Lower limit of controller card's PLL.	- 92000
6	NPC/NPM PLL Max. (8.192 MHz)	Upper limit of controller card's PLL.	+ 508000
7	Clock Test Window	Number of samples that make up a window.	10
8	Clock Test Max Error in Window	Errors within window before fault isolation.	4

* Clock Test parameters—Frequencies are in Hz, offset from 8.192 MHz

Table 1-21 cnfdiagparm—Parameters (continued)

No.	Parameter *	Description	Default *
9	Clock Test Isolation Window	Window size during fault isolation.	10
10	Clock Fault Max. Error in Window	Errors allowed during fault isolation.	3
11	Clock Test Frequency	Interval between clock tests.	200 ms.
12	Clock Test Switch Delay	Delay clock testing after any clock transfers to allow settling.	3000 ms.
13	Card Reset Threshold		255
14	Card Reset Increment		0

* Clock Test parameters—Frequencies are in Hz, offset from 8.192 MHz

When you enter this command, the system responds with the screen illustrated in Figure 1-12.

Note Parameters 1 and 4 are obsolete.

Figure 1-12 cnfdiagparm—Configure Diagnostic Test Parameters

```
sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  01:39 GMT

1. Vdp Test Frequency (seconds)       [50]
2. LDP tstport delay                  [10]
3. System clock drift (8.192 MHz)  +- [480]
4. UEC-B's PLL railing (8.192 MHz) +- [2720]
5. PCC's PLL minimum (8.192 MHz)    - [92000]
6. PCC's PLL maximum (8.192 Mhz)    + [508000]
7. Clock Test Window                  [10]
8. Clock Test Max Error in Window     [4]
9. Clock Fault Isolation Window       [10]
10. Clock Fault Max Error in Window   [3]
11. Clock Test Frequency (msec)       [200]
12. Clock Test Switch Delay (msec)    [2000]
13. Card Reset Threshold              [60]
14. Card Reset Increment              [10]


Last Command: cnfdiagparm


Next Command:
```

cnfdlparm (Configure Download Parameters)

The **cnfdlparm** command sets various software and firmware downloader parameters.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

dspdnld

Syntax

cnfdlparm

Function

This command sets parameters that affect the SW/FW download protocol. It is primarily a debug command. It is included only to accommodate the possibility that some future software or firmware revision may need to be adjusted for optimizing the downloading process.

Caution You should not change downloader parameters except under specific direction from the Technical Assistance Center (TAC).

Parameters

When you enter **cnfdlparm**, the system displays an indexed list of parameters. Table 1-22 describes these parameters, and Figure 1-13 illustrates the **cnfdlparm** screen.

Table 1-22 cnfdlparm—Parameters

No.	Parameter	Description	Range	Default
1	Rmt Blk Freq	For downloads to a remote node, *Rmt Blk Freq* is the time between blocks.	1–9999999 msecs	100 msecs
2	Rmt Blk Size	For downloads to a remote node, *Rmt Blk Size* is the number of bytes in each block.	1–7C0 hex	400 hex
3	Lcl Blk Freq	For downloads to the other processor in the same (local) node, *Lcl Blk Freq* is the time (in msecs) between blocks.	1–9999999 msecs	100 msecs
4	Lcl Blk Size	For downloads to the other processor in the same (local) node, *Lcl Blk Size* is the number of bytes in each block.	1–7C0 hex	400 hex

Table 1-22 cnfdlparm—Parameters (continued)

5	Image Req Freq	The time between requests for a description of an image. When a node seeks a new software image from other nodes, it first sends requests for a full *description* of the image residing on a node to determine if that node has the correct image. The requesting node sends its request one node at a time. *Image Req Freq* is the time between the last request and the request to another node. (This parameter is not a frequency but rather a time period.)	1–9999999 msecs	10000 msecs
6	Dnld Req Freq	After a node seeking a new software image has found a node with the correct image, it requests a download of the image. If the node with the correct image is not available to send the image, the requesting node waits a period of time before it again requests the image. *Dnld Req Freq* is the period of time the requesting node waits before it again requests the image. (This parameter is not a frequency but rather a time period.)	1–9999999 msecs	10000 msecs
7	Session Timeout	The time a receiving node waits for a block transfer to resume. If a block transfer stops after downloading begins, the *Session Timeout* is the time the receiving node waits to resume before it gives up and requests the download again.	1-9999999 msecs	30000 msecs
8	Request Hop Limit	Limit on the number of hops the local node can go to request a download. (The number of hops is the number of trunks that are crossed for one node to communicate with another node.) *Request Hop Limit*=1 means the request can go to only an immediate neighbor.	1–9999999	1
9	Crc Throttle Freq	The number of CRC calculations per second. *Crc Throttle Freq* lets you reduce the number of calculations so the node does not use processor time for CRC calculations.	1–9999999	5000
10	Crc Block Size	Number of bytes that a CRC calculation covers. The default is intentionally the same as *Rmt Blk Size* and *Lcl Blk Size*.	1–7C0 hex bytes	400 hex
11	Rev Change Wait	The time to wait before the node actually loads the software for **loadrev** or **runrev** execution.	0–99999 msecs	0
12	CCs Switch Wait	A wait period before the node actually switches control cards during **switchcc** execution. During normal operation, you should have no reason to increase *CCs Switch Wait*.	1–9999999 msecs	1000 msecs

Table 1-22 cnfdlparm—Parameters (continued)

13	Lcl Response TO (Time Out)	On a local node, a processor that is downloading to another processor must receive an acknowledgment from the receiving processor for each block that correctly arrived. If the sending processor does not receive an acknowledgment by the time *Lcl Response TO* (Time Out) has elapsed, the downloading processor sends the block again.	1–9999999 msecs	5000
14	Rmt Response TO (Time Out)	When one node downloads to another node, the sending node must receive an acknowledgment for each block correctly received. If the sending node receives no acknowledgment by the time *Rmt Response TO* (Time Out) has elapsed, the sending node sends the block again.	1–9999999 msecs	30000
15	FW Dnld Block TO (Time Out)	The wait period that a controller card waits for an acknowledgment from a receiving card that it correctly received a block.	1–9999999 msecs	50 msecs
16	FW Dnld Msgs/Block	Number of Cbus messages per CRC block CRC check on the payload of the FW download message.	1–9999999 msecs	4
17	Flash Write TO	During flash memory programming, *Flash Write TO* (Time Out) is the time to wait for an acknowledgment that a write cycle finished before timing out.	1–9999999 msecs	16000 msecs
18	Flash Erase TO	During a flash memory erasure, *Flash Erase TO* (Time Out) is the time to wait for an acknowledgment that the erase cycle finished before timing out.	1–9999999 msecs	100
19	Erase Verify TO	*Erase Verify TO* (Time Out) is the time to wait for an acknowledgment of the completion of the second (or “true”) verification of the erasure before timing out. The *Erase Verify TO* parameter is useful only if write/erase performance characteristics of a flash memory device change.	1–9999999 msecs	16000 msecs
20	Standby Flash TO	During flash memory programming, *Standby Flash TO* (Time Out) is the time to wait for an acknowledgment that the standby flash is available before timing out.	1–9999999 msecs	300 msecs
21	Lcl Flash Init TO	During flash memory programming, *Lcl* (local) *Flash Init TO* (Time Out) is the time to wait for an acknowledgment that a initialization of local flash memory finished before timing out.	1–9999999 msecs	1000
22	Flsh Write Blk Sz	Number of bytes per write cycle.	1–10000 hex	10000 hex

Table 1-22 cnfdlparm—Parameters (continued)

23	Flsh Verify Blk Sz	Second (or "true") verification of the block write. The *Flsh Verify Blk Sz* parameter is useful only if performance characteristics of a flash memory device change.	1–10000 hex	400 hex
24	Chips Per Write/Erase	Number of bytes per write/erase cycle	1, 2, or 4	1

When you enter this command the system responds with the screen illustrated in Figure 1-13.

Figure 1-13 cnfdlparm—Configure Download Parameters

```
pubsbpx1       VT    SuperUser       BPX 8620    9.2       May  24 1998 23:18 GMT

1  Rmt Blk Freq (msec)     [    100]    16 FW Dnld Msgs/Block(dec) [      4]
2  Rmt Blk Size (hex)      [    400]    17 Flash Write TO(msec)    [  16000]
3  Lcl Blk Freq (msec)     [    100]    18 Flash Erase TO(msec)    [    100]
4  Lcl Blk Size (hex)      [    400]    19 Erase Verify TO(msec)   [  16000]
5  Image Req Freq (msec)   [  10000]    20 Standby Flash TO(sec)   [    300]
6  Dnld Req Freq (msec)    [  10000]    21 Lcl Flash Init TO(msec) [   1000]
7  Session Timeout (msec)  [  30000]    22 Flsh Write Blk Sz (hex) [  10000]
8  Request Hop Limit (dec) [      1]    23 Flsh Verfy Blk Sz (hex) [    400]
9  Crc Throttle Freq (dec) [   5000]    24 Chips Per Write/Erase   [      1]
10 Crc Block Size (hex)    [    400]
11 Rev Change Wait(dec)    [      0]
12 CCs Switch Wait(dec)    [   1000]
13 Lcl Response TO(msec)   [   5000]
14 Rmt Response TO(msec)   [  20000]
15 FW Dnld Block TO(msec)  [     50]

This Command: cnfdlparm


Which parameter do you wish to change:
```

cnfecparm (Configure Echo Canceller Parameters)

The **cnfecparm** command configures the CDP or CVM integrated echo canceller (IEC) parameters for specified voice circuit line.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX	Yes

Associated Commands

cnfchec, **dspecparm**

Syntax

cnfecparm <line> <parameter number> <parameter value>

<line>	Specifies the circuit line to configure.
<parameter number>	Specifies the number of the parameter to change.
<parameter value>	Specifies the new value to enter for the parameter.

Function

The **cnfecparm** command configures the UVM, CVM, or CDP integrated echo canceller (IEC). It configures IEC parameters associated with all voice channels for the specified circuit line. Setting these parameters allows you to optimize the IEC performance. Table 1-23 lists the parameters you can modify. The **dspecparm** command description lists the defaults and provides a sample display. Also, refer to the **cnfchec** command in the *Cisco WAN Switching Command Reference* for configuring per-channel parameters.

Table 1-23 Echo Canceller Parameters

Index	Parameter	Description	Options
1	Echo Return Loss High	Maximum ERL required for echo canceller to converge on speech (value X 0.1 dB).	0–99 dB
2	Echo Return Loss Low	Minimum ERL required for echo canceller to converge on speech (value X 0.1 dB).	0–99 dB
3	Tone Disabler Type	Selection of protocol to enable tone disabler.	G.164, G.165
4	Non-Linear Processing	Selects type of post-canceller signal.	Center Clipper, Multiplying
5	NLP Threshold	Threshold below which non-linear processing is enabled (value X 0.1 dB).	0–99 dB
6	Noise Injection	Determines if noise will be injected when NLP is active.	Enable, Disable
7	Voice Template	Selection of template to use; normal voice levels or high voice levels.	USA—normal UK—high-level

When you enter this command the system responds with the screen illustrated in Figure 1-14.

Figure 1-14 cnfecparm—Configure Echo Canceller Parameters

```
sw83           TN    SuperUser       IGX 8420    9.2    Aug. 1 1998  15:35 PST

IEC Line 7 Parameters
1  CDP IEC Echo Return Loss High (.1 dBs)  [            60] (D)
2  CDP IEC Echo Return Loss Low  (.1 dBs)  [            30] (D)
3  CDP IEC Tone Disabler Type              [         G.164]
4  CDP IEC Non-Linear Processing           [Center Clipper]
5  CDP IEC Non-Linear Processing Threshold [            18] (D)
6  CDP IEC Noise Injection                 [       Enabled]
7  CDP IEC Voice Template                  [           USA]







This Command: cnfecparm 7

Which parameter do you wish to change:
```

cnffstparm (Configure ForeSight Node Parameters)

The **cnffstparm** command configures the Optimized Bandwidth Management (formerly called ForeSight) parameters for Frame Relay ports.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnffrcon

Syntax

cnffstparm

No line or port number need be entered.

Function

This command configures the Optimized Bandwidth Management (formerly ForeSight) parameters for Frame Relay ports. This command has an effect only if the Frame Relay Optimized Bandwidth Management option is enabled. The parameter values set by this command apply to all Frame Relay connections enabled with Optimized Bandwidth Management. Therefore, these parameters must be configured on each node in the network that has Optimized Bandwidth Management connections. (The **cnffrcon** command enables Optimized Bandwidth Management on a connection.) Table 1-24 lists the parameters. Figure 1-15 illustrates BPX command menus.

Figure 1-15 BPX System Response for cnffstparm

```
sw66           TN    SuperUser       BPX 15    9.2 Aug. 28 1998 23:50 GMT

1  FST Increase Rate       [   10] (%)
2  FST Decrease Rate       [   93] (%)
3  FST Fast Decrease Rate  [   50] (%)
4  RTD Measurement Time    [    5] (secs)
5  Default RTD             [  100] (msecs)
6  Minimum RTD             [   40] (msecs)
7  Maximum RTD             [  250] (msecs)
8  FECN for congested mins [   50] (%)
9  QIR Time-out            [  244] (secs)
10 Max TstDelay Retries    [  2] (dec)






Last Command: cnffstparm


Next Command:
```

Table 1-24 cnffstparm—Parameters

Number	Parameter	Description	Default
1	FRP Increase Rate	If free bandwidth is available, the rate at which FRP increases transmission (as a percentage of MIR).	10%
2	FRP Decrease Rate	If free bandwidth becomes unavailable, the rate at which FRP decreases transmission (as a percentage of current rate).	87%
3	FRP Fast Decrease Rate	If a cell is dropped or the TxQ is full, the rate at which FRP decreases transmission (as a percentage of current rate).	50%
4	RTD Measurement Time	The polling interval for measuring round-trip delay on each Frame Relay PVC.	5 sec.
5	Default RTD	The default RTD the connection uses before RTD is measured.	100 ms.
6	Minimum RTD	Min. value used for RTD in FR calculation regardless of measured RTD.	40 ms.
7	Maximum RTD	Max. value used for RTD in FR calculation regardless of measured RTD.	250 ms.
8	FECN for congested mins	When this percentage of packets received have the FECN bit set, a congested minutes field in the **dspfrport** command is indicated.	50%
9	QIR Time-out	Time before the allowable transmit rate is reset to QIR.	10 secs.
10	Max Test Delay Retries	Maximum number of delay test retries after a timeout.	2

cnflan (Configure LAN)

The **cnflan** command configures node communication parameters.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

upln, **dnln**, **cnfln**

Syntax

cnflan <IP_Address> <IP_Subnet_Mask> <Maximum LAN Transmit Unit> <TCP Service Port>

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

Function

This command configures node communication parameters, so the node can communicate with a Cisco WAN Manager terminal over an Ethernet LAN using TCP/IP protocol. The parameters all contain address information about the Ethernet TCP/IP network that connects the Cisco WAN Manager station to an IGX or BPX node. The values must conform to those of the network. The network administrator can supply the parameters. Refer to the screen in Figure 1-16.

Figure 1-16 cnflan—Configure LAN Parameters

```
sw197          TN     SuperUser        IGX 8420    9.2 Apr. 7 1998  01:48 GMT

Active IP Address:                       172.29.9.111
IP Subnet Mask:                          255.255.255.0
IP Service Port:                         5120
Default Gateway IP Address:              172.29.9.1
Maximum LAN Transmit Unit:               1500
Ethernet Address:                        00.C0.43.00.1F.7F

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

This Command: cnflan


Enter IP Address:
```

cnflnparm (Configure ATM Line Card Parameters)

The **cnflnparm** command configures several parameters for ATM lines originating on the BPX or IGX nodes.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

upln, **dnln**, **cnfln**

Syntax

cnflnparm <slot.port> <option 1–4>

<slot.port>	Specifies the line to configure.
<option >	Specifies the parameter to configure.

Function

This command configures the circuit line alarm integration times in milliseconds for Red and Yellow circuit line alarms. You should set them to correspond to the local carrier's alarm integration times. The **cnflnparm** range for each of these parameters is 60–3932100 ms. Carrier integration times are typically 800 ms–1500 ms for Red Alarm and 1500–3000 ms for Yellow Alarm.

You can also set the queue depth for the two queues associated with the ASI-0 card, the constant bit rate (CBR) queue and the Variable Bit Rate (VBR) queue. The queue depths may be increased to 16,000 bytes per queue.

When you enter **cnflnparm**, the system responds with the screen in Figure 1-17. The **cnflnparm** command is quite similar to the **cnfln** command.

Figure 1-17 cnflnparm—Configure ATM Line Card Parameters

```
sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  01:54 GMT

LN  5.1 Parameters
 1  Red Alarm - In/Out  [  2500 /  15000] (Dec)
 2  Yel Alarm - In/Out  [  2500 /  15000] (Dec)









This Command: cnflnparm 5.1


Which parameter do you wish to change: Which parameter do you wish to change:
```

cnflnsigparm (Configure Line signaling Parameters)

The **cnflnsigparm** command configures the line signaling parameters for the CVM and UVM voice cards.

Note The CVM and UVM Heartbeat parameter (option 1) is the rate, in seconds, at which the card sends a signaling (ABCD bits) state update to the other end of the connection, even when there is no change in the state of the signaling bits. This is done because signaling packets are time-stamped data packets, and there is a small chance that a signaling packet might be discarded somewhere in the network. This recovery mechanism ensures that on-hook and off-hook notifications are not lost.

Increasing this interval will probably have no impact as long as none of the normal signaling time-stamped data packets are being discarded in the network.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnflnparm, **cnflnstats**, **dsplnstatcnf**, **dsplnstathist**, **upln**, **dnln**, **cnfln**

Syntax

cnflnsigparm <parameter number> <parameter value>

<parameter number>	Specifies the number of the parameter to change.
<parameter value>	Specifies the new value to enter.

Function

The **cnflnsigparm** command configures the line signaling parameters associated with a line. When you enter **cnflnsigparm**, the screen displays the parameters, as shown in Figure 1-18.

Note In Release 9.2 and higher, the CVM and UVM are supported cards. The CIP and CDP cards are not supported.

Figure 1-18 cnflnsigparm—Configure Line signaling Parameters

```
cc2            LAN   SuperUser       IGX 32    9.2     Aug. 30 1998 11:16 PST

1  CVM & UVM Heartbeat                                 [   2] (sec)
2  CVM & UVM Sig. Polling Rate                         [  10] (sec)
3  CVM & UVM Default Inband Sig Delay                  [  96] (msec)
4  CVM & UVM Default Inband Playout Delay              [ 200] (msec)
5  CVM & UVM Default Pulse Sig Delay                   [  96] (msec)
6  CVM & UVM Default Pulse Playout Delay               [ 200] (msec)
7  UVM Number of Packet Slices                         [   1]
8  CVM & UVM Packet Rate                               [ 200] (pkt/sec)
9  CVM & UVM Condition T1 CCS Lines or T1 Lines?       [ YES]
10 UVM Default Inband Min. Wink                        [ 140] (msec)
11 UVM Default Pulse Min. Wink                         [ 140] (msec)
12 CVM & UVM Condition T1 Lines?                       [ YES] (yes/no)




This Command: cnflnsigparm


Which parameter do you wish to change
```

Table 1-25 cnflnsignparm—Parameters and Descriptions

No.	Parameter	Description	Range
1	Heartbeat	The current state of the signaling is periodically transmitted to the far end even if no signaling transitions are detected. This interval is determined by the value of the “heartbeat.” The CVM & UVM Heartbeat parameter (option 1) is the rate, in seconds, at which the card sends a signaling (ABCD bits) state update to the other end of the connection, even when there is no change in the state of the signaling bits. This is done because signaling packets are time-stamped data packets, and there is a small chance that a signaling packet might be discarded somewhere in the network. This recovery mechanism ensures that on-hook and off-hook notifications are not lost. Increasing this interval will probably have no impact as long as none of the normal signaling TS data packets are being discarded in the network.	2–30 sec.
2	Signal Polling Rate	How often the control card polls the UVM/CVM for the status of the signaling. This parameter is used to update displays and statistics.	2–60 sec.
3	Default Inband Signal Delay	The transmit buffer timer value set after a valid signaling transition for in-band signaling arrives. After timeout, a signaling packet is sent.	30–96 msec.
4	Default Inband Playout Delay	The receive buffer timer that “ages” an incoming, time-stamped packet. When the age of the packet reaches the timestamp value, it moves on to depacketization and then to the user equipment. This parameter is used to even out the delay between signaling packets and voice packets.	0–200 msec.
5	Default Pulse Signal Delay	Same as number 3 but applied to pulse signaling.	30–96 msec.

Table 1-25 cnflnsignparm—Parameters and Descriptions (continued)

No.	Parameter	Description	Range
6	Default Pulse Playout Delay	Same as number 4 but applied to pulse signaling.	100–200 msec.
7	CVM Number of Packet Slices		1
8	Packet Rate	Reserves trunk bandwidth for carrying UVM/CVM signaling.	0–1000 packets/sec.
9	Condition CCS Lines	If you specify yes for this parameter, the card applies signaling conditioning during an alarm to all channels on T1 circuit lines to notify PBX of a line failure.	YES or NO
10	Inband Min. Wink	Same as 6 for in-band signaling.	120–300 msec.
11	Pulse Min. Wink	For UVM/CVM connections only, this parameter controls both wink and inter-digit intervals for signaling that arrives over the NPC or NPM signaling channel from a far end UVM/CVM.	120–300 msec.
12	Condition T1 Lines?	If you specify yes for this parameter, the card applies signaling conditioning during an alarm to all channels on T1 circuit lines to notify PBX of a line failure.	YES or NO

cnflnstats (Configure Line Statistics Collection)

The **cnflnstats** command configures statistics collection for a line.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

dsplnstatcnf, **dsplnstathist**

Syntax

cnflnstats <line> <stat> <interval> <e | d> [<samples> <size> <peaks>]

<line>	Specifies the port to configure.
<stat>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<e|d>	Enables/disables a statistic;. E to enable, D to disable.
[samples]	Specifies the number of samples to collect (1–255).
[size]	Specifies the number of bytes per data sample (1, 2, or 4).
[peaks]	Enables the collection of one minute peaks; Y to enable, N to disable.

Function

Primarily, **cnflnstats** is a debug tool. It lets you customize statistics collected on each line. Table 1-26 lists the statistics for FastPacket-based cards with T1 or E1 lines. For other available parameters, refer to the actual screens on a node. For example, Figure 1-20 and Figure 1-21 show available statistics for a UXM port and an ASI-155 port, respectively.

Not all statistic types are available for all lines. Only valid statistics are displayed for you to select.

Table 1-26 Statistics for FastPacket Cards

Statistic Index Number	Statistic	Line Type
1	Bipolar Violations	E1 and T1
2	Frame Slips	E1 and T1
3	Out of Frames	E1 and T1
4	Loss of Signal	E1 and T1

Table 1-26 Statistics for FastPacket Cards (continued)

Statistic Index Number	Statistic	Line Type
5	Frame Bit Errors	E1 only
6	CRC Errors	E1 only
7	Out of Multi-Frames	E1 only
8	All Ones in Timeslot 16	E1 only

Note Bipolar violations are not generally accumulated on E1 trunk and circuit lines. They are accumulated only on T1 lines connected to Frame Relay ports.

Figure 1-19 illustrates the screen displayed after entering **cnflnstats** on a FastPacket-based card. The three screens in Figure 1-20 show the statistics available on a UXM port. The two screens in Figure 1-21 show the statistics available on an ASI-155 card.

Figure 1-19 cnflnstats—Configure Line Statistics

```
cc2            LAN   SuperUser       IGX 8430    9.2     Aug. 30 1998 11:20 PST

Line Statistic Types

 1) Bipolar Violations
 2) Frames Slips
 3) Out of Frames
 4) Losses of Signal
 5) Frames Bit Errors
 6) CRC Errors
 7) Out of Multi-Frames
 8) All Ones in Timeslot 16




Last Command: cnflnstats 15 6 255 e


Next Command:
```

Figure 1-20 cnflnstats for a UXM Port

```
sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  02:11 GMT

Line Statistic Types

  1) Bipolar Violations                    37) Severely Err Secs - Path
  3) Out of Frames                         38) Severely Err Frame Secs
  4) Losses of Signal                      40) Unavail. Seconds
  5) Frames Bit Errors                     41) BIP-8 Code Violations
  6) CRC Errors                            42) Cell Framing Errored Seconds
 29) Line Code Violations                  43) Cell Framing Sev. Err Secs.
 30) Line Errored Seconds                  44) Cell Framing Sec. Err Frame Secs
 31) Line Severely Err Secs                45) Cell Framing Unavail. Secs.
 32) Line Parity Errors                    62) Total Cells Tx to line
 33) Errored Seconds - Line                69) Total Cells Rx from line
 34) Severely Err Secs - Line              98) Frame Sync Errors
 35) Path Parity Errors                   141) FEBE Counts
 36) Errored Secs - Path                  143) Cell Framing FEBE Err Secs

This Command: cnflnstats 5.1


Continue? y


sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  02:12 GMT

Line Statistic Types

144) Cell Framing FEBE Sev. Err. Secs.  202) Section BIP8 Err. Secs.
151) Yellow Alarm Transition Count      203) Line BIP24 Err. Secs.
152) Cell Framing Yel Transitions       204) Line FEBE Err. Secs.
153) AIS Transition Count               205) Path BIP8 Err. Secs.
193) Loss of Cell Delineation           206) Path FEBE Err. Secs.
194) Loss of Pointer                    207) Section BIP8 Severely Err. Secs.
195) OC-3 Path AIS                       208) Section Sev. Err. Framing Secs.
196) OC-3 Path YEL                       209) Line BIP24 Severely Err. Secs.
197) Section BIP8                       210) Line FEBE Severely Err. Secs.
198) Line BIP24                         211) Path BIP8 Severely Err. Secs.
199) Line FEBE                          212) Path FEBE Severely Err. Secs.
200) Path BIP8                          213) Line Unavailable Secs.
201) Path FEBE                          214) Line Farend Unavailable Secs.

This Command: cnflnstats 5.1


Continue? y

sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  02:12 GMT

Line Statistic Types

215) Path Unavailable Secs.
216) Path Farend Unavailable Secs.
217) HCS Uncorrectable Error
218) HCS Correctable Error

This Command: cnflnstats 5.1


Statistic Type:
```

Figure 1-21 cnflnstats for an ASI-155

```
sw59           TN    SuperUser       BPX 15    9.2 Apr. 7 1998  10:42 GMT

Line Statistic Types

 3) Loss of Frames                       176) Line FEBE
 4) Loss of Signal                       177) Path BIP8
46) HCS Errors                           178) Path FEBE
147) HCS Errored Seconds                 179) Section BIP8 Err. Secs.
148) HCS Severely Err. Secs.             180) Line BIP24 Err. Secs.
151) YEL Transitions                     181) Line FEBE Err. Secs.
153) Alarm Indication Signal             182) Path BIP8 Err. Secs.
170) Loss of Cell Delineation            183) Path FEBE Err. Secs.
171) Loss of Pointer                     184) Section BIP8 Severely Err. Secs.
172) OC-3 Path AIS                        185) Section Sev. Err. Framing Secs.
173) OC-3 Path YEL                        186) Line BIP24 Severely Err. Secs.
174) Section BIP8
175) Line BIP24

This Command: cnflnstats 10.1


Continue?



sw59           TN    SuperUser       BPX 15    9.2 Apr. 7 1998  10:43 GMT

Line Statistic Types

187) Line FEBE Severely Err. Secs.
188) Path BIP8 Severely Err. Secs.
189) Path FEBE Severely Err. Secs.
190) Line Unavailable Secs.
191) Line Farend Unavailable Secs.
192) Path Unavailable Secs.
193) Path Farend Unavailable Secs.
194) HCS Correctable Error
195) HCS Correctable Error Err. Secs
196) HCS Correctable Error SevErr Secs




This Command: cnflnstats 10.1


Statistic Type:
```

Table 1-27 provides BXM object names and some line statistics descriptions for the BXM card. Note that the object name given is, in most cases, the same as the screen field name when the **cnflnstats** screen is displayed.

Note Where interface type is not specified it is implied to be of generic nature, and is good for all BXM interfaces (T3, E3, OC-3, OC-12).

Table 1-27 cnflnstats—Line Statistics Descriptions (BXM Card)

Object ID	Object Name	Range	Description
01	Message Tag	Byte 0-3: Tag ID Byte 4-7: IP Address	Identifier and source IP address sent with CommBus message. Both will be copied into the response, if any is to be sent.
02	Line Number	1 - 12	Identifies the target line number. If multiple line numbers are sent during the operation, then each line number object terminates the configuration for the string of objects for the previous line number.
03	Statistical Subset	Byte 0: Subset # 0: All stats 1-4: Subset # Byte 1-n: List of Stat Objects in subset	The set operator configures the subset template. The get operator uses the subset number to build a response. It ignores the “byte 1-n” string.
04	Statistics Auto-Reset Option	0: Disabled 1: Enabled	Statistics will be automatically reset after sent to the BCC in an Event Message if the Auto-Reset option is enabled. After the instance of an enable or disable command, the condition will persist until another Auto-Reset command is encountered. Note reset is on a line basis.
05	Total Cells Transmitted	$0 - 2^{32}-1$	Total cells transmitted at the physical layer interface.
06	Total Cells Received	$0 - 2^{32}-1$	Total cells received at the physical layer interface.
07	RESERVED		
08	LOS	$0 - 2^{32}-1$	Number of instances of LOS.
09	LOF	$0 - 2^{32}-1$	Number of instances of LOF.
0A	Line AIS	$0 - 2^{32}-1$	Number of instances of AIS.
0B	Line RDI (YEL)	$0 - 2^{32}-1$	Number of instances of Yellow Alarm detection.
0C	T3/E3 LCV	$0 - 2^{32}-1$	T3/E3 Line Code Violation Count.
0D	T3 PCV	$0 - 2^{32}-1$	T3 P-Bit Code Violations (Line) Count.
0E	T3 CCV	$0 - 2^{32}-1$	T3 C-Bit Code Violations (Path) Count.

Table 1-27 cnflnstats—Line Statistics Descriptions (BXM Card) (continued)

Object ID	Object Name	Range	Description
0F	T3 FEBE	0 - 2^{32}-1	Far End Block Error.
10	T3/E3 FERR	0 - 2^{32}-1	Framing Errors Count.
11	T3/E3 LES	0 - 2^{32}-1	Line Errored Seconds Count. Incremented for each second there was at least one LCV.
12	T3 PES	0 - 2^{32}-1	T3 P-bit Errored Seconds Count. Incremented for each second there was at least one PES.
13	T3 CES	0 - 2^{32}-1	T3 C-bit Errored Seconds Count. Incremented for each second there was at least one CES.
14	T3/E3 LSES	0 - 2^{32}-1	Line Severely Errored Seconds Count. Incremented for each second there were 44 or more LCVs.
15	T3 PSES	0 - 2^{32}-1	T3 P-bit Severely Errored Seconds Count. Incremented for each second there were 44 or more P-bit Errors.
16	T3 CSES	0 - 2^{32}-1	T3 C-bit Severely Errored Seconds Count. Incremented for each second there were 44 or more C-bit Errors.
17	T3/E3 SEFS	0 - 2^{32}-1	T3/E3 Severely Errored Framing Seconds Count incremented for each second there was one or more Severely Errored Framing Errors (OOF).
18	T3/E3 UAS	0 - 2^{32}-1	Unavailable Seconds. Count starts from the onset of LOS, LOF, or AIS.
19	T3 PLCP LOF	0 - 2^{32}-1	PLCP Loss of Frame. Number of times Loss of Frame was detected by the PLCP.
1A	T3 PLCP YEL	0 - 2^{32}-1	PLCP Yellow Alarm count.
1B	T3/E3 PLCP BIP-8	0 - 2^{32}-1	PLCP/G.832 BIP-8 Errors. Incremented each BIP-8 Error was detected by PLCP.
1C	T3/E3 PLCP FEBE	0 - 2^{32}-1	T3/E3 PLCP/G.832 Far End Block Errors.
1D	T3 PLCP FOE	0 - 2^{32}-1	T3 PLCP Framing Octet Errors
1E	T3/E3 PLCP BIP-8 ES	0 - 2^{32}-1	T3/E3 PLCP/G.832 BIP-8 Errored Seconds. Incremented each second at least one PLCP BIP-8 Error was detected.
1F	T3/E3 PLCP FEBE ES	0 - 2^{32}-1	T3/E3 PLCP/G.832 FEBE Errored Seconds. Incremented each second at least one PLCP FEBE was detected.
20	T3/E3 PLCP BIP-8 SES	0 - 2^{32}-1	T3/E3 PLCP/G.832 BIP-8 Severely Errored Seconds. Incremented each second there were at least 5 BIP-8 Errors.
21	T3/E3 PLCP FEBE SES	0 - 2^{32}-1	T3/E3 PLCP/G.832 FEBE Severely Errored Seconds. Incremented each second there were at least 5 FEBE Errors.

Table 1-27 cnflnstats—Line Statistics Descriptions (BXM Card) (continued)

Object ID	Object Name	Range	Description
22	T3 PLCP SEFS	0 - 2^{32}-1	T3 Severely Errored Framing Seconds.Incremented each second there was at least one SEF event. (PLCP OOF).
23	T3 PLCP UAS	0 - 2^{32}-1	T3 PLCP Unavailable Seconds. Count starts at the onset of LOS, LOF, AIS, or PLCP LOF.
24	RESERVED		
25	HCS uncorrectable errors	0 - 2^{32}-1	Number of instances of Loss of Cell Delineation.
26	RESERVED		
27	LOC	0 - 2^{32}-1	Number of instances of Loss of Cell Delineation.
28	OC-3 LOP	0 - 2^{32}-1	Number of instances of Loss of Pointer.
29	OC-3 Path AIS	0 - 2^{32}-1	Number of instances of Path AIS.
2A	OC-3 Path RDI (YEL)	0 - 2^{32}-1	Number of instances of Path Yellow.
2B	OC-3 Section BIP-8 Errors	0 - 2^{32}-1	Number of instances of Section BIP-8 Errors.
2C	OC-3 Line BIP-24	0 - 2^{32}-1	Number of instances of Line BIP-24 Errors.
2D	OC-3 Line FEBE	0 - 2^{32}-1	Number of instances of Line Far-End Blocking Errors.
2E	OC-3 Path BIP-8	0 - 2^{32}-1	Number of instances of Path BIP-8 Errors.
2F	OC-3 Path FEBE	0 - 2^{32}-1	Number of instances of Path Far-End Blocking Errors.
30	OC-3 Section BIP-8 ES	0 - 2^{32}-1	Number of seconds that had at least one instance of Section BIP-8 Errors.
31	OC-3 Line BIP-24 ES	0 - 2^{32}-1	Number of seconds that had at least one instance of Line BIP-24 Errors.
32	OC-3 Line FEBE ES	0 - 2^{32}-1	Number of seconds that had at least one instance of Line Far-End Blocking Errors.
33	OC-3 Path BIP-8 ES	0 - 2^{32}-1	Number of seconds that had at least one instance of Path BIP-8 Errors.
34	OC-3 Path FEBE ES	0 - 2^{32}-1	Number of seconds that had at least one instance of Path Far-End Blocking Errors.
35	OC-3 Section BIP-8 SES	0 - 2^{32}-1	Number of seconds that had at least 2500/8800 (OC-3/OC-12) instances of Section BIP-8 Errors.
36	OC-3 Section SEFS	0 - 2^{32}-1	Number of seconds that had at least 2500/8800 (OC-3/OC-12) instances of OOF.

Table 1-27 cnflnstats—Line Statistics Descriptions (BXM Card) (continued)

Object ID	Object Name	Range	Description
37	OC-3 Line BIP-24 SES	0 - 2^{32}-1	Number of seconds that had at least 2500/10000 (OC-3/OC-12) instances of Line BIP-24 Errors.
38	OC-3 Line FEBE SES	0 - 2^{32}-1	Number of seconds that had at least 2500/10000 (OC-3/OC-12) instances of Line Far-End Blocking Errors.
39	OC-3 Path BIP-8 SES	0 - 2^{32}-1	Number of seconds that had at least 2400 instances of Path BIP-8 Errors.
3A	OC-3 Path FEBE SES	0 - 2^{32}-1	Number of seconds that had at least 2400 instances of Path Far-End Blocking Errors.
3B	OC-3 Line UAS	0 - 2^{32}-1	Number of seconds that the line was unavailable, in LOS, LOF, AIS, or after the occurrence of 10 contiguous Line SESs.
3C	OC-3 Line Far End UAS	0 - 2^{32}-1	Number of seconds that the line experienced at least 10 contiguous Line FEBE SESs.
3D	OC-3 Path UAS	0 - 2^{32}-1	Number of seconds that the line was unavailable, in LOP, Path AIS, or after the occurrence of 10 contiguous Path SESs.
3E	OC-3 Path Far End UAS	0 - 2^{32}-1	Number of seconds that the line experienced at least 10 contiguous Path FEBE SESs.
3F	HCS correctable errors	0 - 2^{32}-1	Number of instances of Loss of Cell Delineation.
40 -41	RESERVED		

cnfclnstats (Configure Circuit Line Statistics)

The **cnfclnstats** command configures parameters for circuit line statistics collection.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX	Yes

Associated Commands

dspchstats

Syntax

cnfclnstats <line> <stat> <interval> <e|d> [<samples> <size> <peaks>]

<line>	Specifies the circuit line to configure.
<stat>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<e|d>	Enables/disables a statistic; E to enable, D to disable.
[samples]	Specifies the number of samples to collect (1–255).
[size]	Specifies the number of bytes per data sample (1, 2, or 4).
[peaks]	Enables/disables the collection of ten second peaks; Y to enable, N to disable.

Function

This command configures circuit line statistics. The **cnfclnstats** command lets you customize statistics collection on each circuit line. It primarily applies to debugging and not standard network operation. Table 1-28 lists the statistics by type. Figure 1-22 illustrates the display.

Not all statistic types are available for all lines. Valid statistics appear in full brightness while unavailable types appear in half brightness.

Note Typically, bipolar violations do not accumulate on E1 trunks and circuit lines. They accumulate only on T1 lines and trunks.

Table 1-28 cnfclnstats—Field Descriptions

Statistic Type	Statistic	Line Type
1	Bipolar Violations	E1 and T1
2	Frame Slips	E1 and T1

Table 1-28 cnfclnstats—Field Descriptions (continued)

Statistic Type	Statistic	Line Type
3	Out of Frames	E1 and T1
4	Loss of Signal	E1 and T1
5	Frame Bit Errors	E1 only
6	CRC Errors	E1 only
7	Out of Multi-Frames	E1 only
8	All Ones in Timeslot 16	E1 only

The card in the example is a UXM. The line is 5.1. The only statistic in this example is 215—the number of seconds that the path was unavailable. (To configure more statistics, you would have to re-enter the command.) Other parameters in this example are an interval of 5 minutes, an accumulation of 29 samples, a sample size of 2 bytes, and the choice of enabling of 10 minute peaks.

Figure 1-22 cnfclnstats—Configure Circuit Line Statistics (T1 Line)

```
sw197          TN    SuperUser IGX 8420    9.2 Apr. 7 1998  01:21 GMT

Line Statistic Types

  1) Bipolar Violations                    37) Severely Err Secs - Path
  3) Out of Frames                         38) Severely Err Frame Secs
  4) Losses of Signal                      40) Unavail. Seconds
  5) Frames Bit Errors                     41) BIP-8 Code Violations
  6) CRC Errors                            42) Cell Framing Errored Seconds
 29) Line Code Violations                  43) Cell Framing Sev. Err Secs.
 30) Line Errored Seconds                  44) Cell Framing Sec. Err Frame Secs
 31) Line Severely Err Secs                45) Cell Framing Unavail. Secs.
 32) Line Parity Errors                    62) Total Cells Tx to line
 33) Errored Seconds - Line                69) Total Cells Rx from line
 34) Severely Err Secs - Line              98) Frame Sync Errors
 35) Path Parity Errors                   141) FEBE Counts
 36) Errored Secs - Path                  143) Cell Framing FEBE Err Secs

This Command: cnfclnstats 5.1


Continue?


Line Statistic Types

144) Cell Framing FEBE Sev. Err. Secs.  202) Section BIP8 Err. Secs.
151) Yellow Alarm Transition Count      203) Line BIP24 Err. Secs.
152) Cell Framing Yel Transitions       204) Line FEBE Err. Secs.
153) AIS Transition Count               205) Path BIP8 Err. Secs.
193) Loss of Cell Delineation           206) Path FEBE Err. Secs.
194) Loss of Pointer                    207) Section BIP8 Severely Err. Secs.
195) OC-3 Path AIS                       208) Section Sev. Err. Framing Secs.
196) OC-3 Path YEL                       209) Line BIP24 Severely Err. Secs.
197) Section BIP8                       210) Line FEBE Severely Err. Secs.
198) Line BIP24                         211) Path BIP8 Severely Err. Secs.
199) Line FEBE                          212) Path FEBE Severely Err. Secs.
200) Path BIP8                          213) Line Unavailable Secs.
201) Path FEBE                          214) Line Farend Unavailable Secs.

This Command: cnfclnstats 5.1


Continue? y


sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  01:22 GMT

Line Statistic Types

215) Path Unavailable Secs.
216) Path Farend Unavailable Secs.
217) HCS Uncorrectable Error
218) HCS Correctable Error

Last Command: cnfclnstats 5.1 215 5 e 29 2 y


Next Command:
```

cnfmxbutil (Configure Muxbus Utilization)

The **cnfmxbutil** command configures the Muxbus or cell bus utilization factor for each FRP or FRM, respectively.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

none

Syntax

cnfmxbutil <slot number> <percentage>

<slot number>	Specifies the slot number of the associated FRP card.
<percentage>	Specifies the percent of Muxbus or cell bus bandwidth to allocate.

Function

The **cnfmxbutil** command lets you configure the Muxbus or cell bus utilization factor for each FRP or FRM in the node on a slot-by-slot basis. (System software automatically allocates a certain amount of bandwidth for each FRP or FRM in a node. Since the maximum data rate for an FRP or FRM is 2 Mbps, this bandwidth is also the maximum amount of the bus reserved for an FRP or FRM.)

In many applications, each of the four FRP or FRM ports is configured for a large number of 56 or 64 Kbps connections. System software totals the bandwidth required for all the connections, multiplies the total by 121% to reserve extra bandwidth for overhead, then subtracts this amount from the total available bus bandwidth.

However, statistically full utilization is not often required on ports with a large number of connections, so the reserved bus bandwidth may be further reduced. In a node with a T3 or E3 ATM trunk card, much of the bus bandwidth may be assigned to the ATM trunk, so you should exercise caution when allocating the remaining bus bandwidth.

See Figure 1-23 for a sample screen. The screen displays “N/A” for a slot where no FRP or FRM exists. Once the slot is selected, the system displays the message “Enter Utilization Factor.” The range is 1–250%. The default is 121%. The extra 21% for the default is for the overhead for encapsulating the Frame Relay frame into the FastPackets or ATM cells.

Figure 1-23 cnfmxbutil—Configure Muxbus Utilization

```
gamma     Cisco WAN Manager     SuperUser      IGX 8420     Rev:  9.2      Aug. 14 1998
14:27 PDT




      Slot  1: N/A      Slot 9:  N/A     Slot 17: 121%     Slot 25: N/A
      Slot  2: N/A      Slot 10: N/A     Slot 18: 121%     Slot 26: N/A
      Slot  3: N/A      Slot 11: N/A     Slot 19: N/A      Slot 27: N/A
      Slot  4: N/A      Slot 12: N/A     Slot 20: N/A      Slot 28: N/A
      Slot  5: N/A      Slot 13: N/A     Slot 21: N/A      Slot 29: N/A
      Slot  6: N/A      Slot 14: N/A     Slot 22: N/A      Slot 30: N/A
      Slot  7: N/A      Slot 15: N/A     Slot 23: N/A      Slot 31: N/A
      Slot  8: N/A      Slot 16: N/A     Slot 24: N/A      Slot 32: N/A



This Command: cnfmxbutil


Enter Slot:
```

cnfnodeparm (Configure Node Parameter)

Sets a variety of general parameters for the nodes in a network.

In switch software release 9.3.10 and higher, the ILMI Neighbor Discovery feature is available for use with ports (not virtual ports) on the BXM card and UXM card. This feature enables a network management system, such as Cisco WAN Manager or CiscoWorks 2000, to discover other attached ATM devices, such as Cisco ATM routers or switches. The attached devices also must support ILMI Neighbor Discovery for this feature to work.

When ILMI Neighbor Discover is enabled on a port, the BPX or IGX and the attached ATM device will exchange their management IP addresses together with other interface information with each other using the ILMI protocol. The exchanged information consists of the following:

- atmfMyIfName: physical interface name
- atmfMyIfIdentifier: Interface identifier
- atmfMyIpNmAddress: Management IP Address, either the LAN IP or network IP.
- atmfMySysIdentifier: System Identifier, a 6-byte string read from the BPX NOVRAM, or if not available, the default value is "000001"

Use parameter option 56 (BXM) or 53 (UXM) from the **cnfnodeparm** command to configure the ILMI Management IP address. The Management IP address is used by the NMS application to access the BPX, IGX, or the ATM device. Depending upon your network set up, you can configure the BPX or IGX to send either the LAN IP address or Network IP address as part of the neighbor information exchange with the attached ATM device. Enter 0 for LAN IP address, or 1 for Network IP address. The default is the network IP address for the BPX or IGX.

Options that must be set for **cnfport** are shown in Figure 1-23. Refer to the **cnfport** command in the *Update to the WAN Switching Command Reference, Release 9.3.10* for further information about using the **cnfport** command.

Table 1-29 cnfport—Parameters to Set for ILMI Neighbor Discovery

Parameters	Value
Protocol	ILMI
Protocol by Card	Yes
NebrDisc Enabled	Yes
ILMI Polling Enabled	Yes

Use the **dspnebdisc** command to display all the neighbor's information discovered by the BPX or the IGX via the ILMI Neighbor Discovery procedure.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnfport, dspnebdisc

Syntax

cnfnodeparm

Function

The **cnfnodeparm** command lets you change some of the node's system parameters. The parameters you can set with **cnfnodeparm** are not closely related. Table 1-30 and Table 1-31 describe the parameters for the IGX and BPX nodes, respectively. After each table, an applicable set of **cnfnodeparm** screens appears. The defaults for the parameters are selected by Cisco engineering to operate under normal network conditions. With few exceptions, you should change them only with the guidance of the Cisco TAC.

In Release 9.2 and higher, two new options are provided that you can use to determine the maximum frequency with which hitless rebuilds can occur before a full rebuild of the node is started. See "Attributes" section on page 1-239 for more information on hitless rebuild.

Table 1-30 IGX cnfnodeparm Parameters

Index	Parameter	Description	Default
1	Update Initial Delay (sec.)	Specifies a factor for generating a delay before conditional updates are transmitted to the network after a controller card switchover. The *Update Initial Delay* is multiplied by the number of nodes in the network.	5000 (D)
2	Update Per-Node Delay (ms.)	Specifies the delay between transmission of conditional updates to the nodes.	30000 (D)
3	Comm. Break Test Delay (ms.)	Normal interval between tests for communication break on any node.	30000 (D)
4	Comm. Break Test Offset	Factor between number of communication test failures and test successes to declare a node in communication break condition.	10 (D)
5	Network Time-out Period	Number of milliseconds to wait for a response to a communication test transmission before declaring a failure. The maximum is four failures.	1700 (D)
6	Network Inter-p Period	In inter-domain connections, *Network Inter-p Period* is the number of milliseconds to wait for a response to a communication test transmission before declaring a failure. The maximum is four failures.	4000 (D)
7	Network Sliding Window Size	Controls the number of control card messages that the node can simultaneously transmit to the network. This parameter defines the number of "no acknowledgments outstanding" on a controller before NACKS is declared.	1 (D)
8	Number of Normal Time-outs	For intra-domain connections: *Number of Normal Time-outs* is the maximum number of normal network retransmissions before the node signals a communication break.	7 (D)
9	Number of Inter-p Time-outs	For inter-domain connections: *Number of Inter-p Time-outs* is the maximum number of normal network retransmissions before the node signals a communication break.	3 (D)
10	Number of Satellite Time-outs	Maximum number of satellite network retransmissions before the node signals a communication break.	6 (D)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
11	Number of Blind Time-outs	Maximum number of communication fail time-outs and retransmissions performed when using the blind channel. "Blind" refers to the message being sent across the trunk without knowing what node is on the other end of the trunk. The Comm Fail test uses this blind channel, however, the Comm Fail application has a non-configurable limit of three comm failures before declaring Comm Fail. For example, the network handler task will attempt to deliver the Comm Fail request message four times before reporting a failure back to the Comm Fail application, which will retry twice more (each with four retries on the blind channel) before declaring Comm Fail. The Number of Blind Time-outs parameter is the number of communication fail time-outs and retransmissions performed when using the blind channel.	4 (D)
12	Number of CB Msg Timeouts	Number of communication break time-outs and retransmissions before the node declares a communication break condition (CB). One successful acknowledgment clears the CB condition.	2 (D)
13	Comm. Fail Interval (ms.)	Minimum time allocated for communication fail testing of all trunks terminating on the local node.	10,000 (D)
14	Comm. Fail Multiplier	Number of Comm. Fail Intervals to skip for good lines.	3 (D)
15	Temperature Threshold (°C.)	Temperature in the enclosure that causes an over-temperature alarm to go to the controller card.	50 (D)
16	NPC Redundancy Configured	A y indicates a redundant controller card is required. The absence of a redundant controller card generates an alarm.	Y
17	MT3 Pass Through Delay	The parameter is OBSOLETE.	
18	Network Packet TX Rate	Rate for transmitting control card packets to the network. The range is a series of discreet values: 100 200 333 500 1000 1100 1200 1333 1500 2000. The units of measure are packets per second (pps). The purpose of this parameter is to prevent the control card from flooding the trunk with packets.	500 pps
19	TFTP Memory (x 10 KB)	Specifies the amount of controller memory to allocate for statistics collection.	76 (D)
20	Standby Update Timer	Specifies how often to send update messages to standby controller.	10 (D)
21	Stby Updts Per Pass	Number of messages that can be sent to the standby NPC for each update interval.	30 (D)
22	Gateway ID Timer	An inter-domain rerouting timer. How often to look for junction nodes for new route.	30 (D)
23	GLCON Alloc Timer	Another inter-domain rerouting timer controlling the gateway LCON function.	30 (D)
24	Comm Fail Delay	Number of seconds before starting to detect communication failures after a controller switch over.	60 (D)
25	Nw Hdlr Timer (msec)	Network handler timer determines how long to wait to send messages to or receive messages from a remote node.	50 (D)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
26	CBUS Delay	Specifies the minimum number of milliseconds the NPC or NPM must wait before it places the next command on the CBUS.	20 (D)
27	SNMP Event Logging	Enables maintenance logging of global SNMP messages. These SNMP events are not errors but any GET, SET, and so on. Output goes to a printer connected to the node's auxiliary port or a terminal server (accessible via telnet). Without a connected output device, the parameter is meaningless.	y=yes
28	TFTP Grant Delay (sec)	The number of seconds the node waits before resending a TFTP request after a TFTP error has occurred. This field is display-only; you set the value in Cisco WAN Manager.	1
29	TFTTP ACK Time-out (sec)	The number of seconds the node waits for an acknowledgment of a TFTP request before it declares the request as timed out. This field is display-only; you set the value in Cisco WAN Manager.	10
30	TFTP Write Retires	The number of times the node retries a TFTP operation (not just writes) after a failed attempt. This field is display-only: you set the value in Cisco WAN Manager.	3
31	FRP/FRM Link Status Alarm	Determines whether a signaling failure on an FRP or FRM port causes a major alarm. This parameter applies to any port configured as an NNI.	y=yes
32	Job Lock Time-out	The range is 1–1000 seconds. The default of 0 disables this parameter.	0
33	Max Via LCONs	The maximum number of "via" connections a node can support. (A via connection does not terminate on the node but merely passes through.) This maximum is configurable, but you cannot lower the number below the current limit on the node. The default is the current maximum and should remain unchanged for normal operating conditions.	On an IGX node: 20000 On a BPX node: 50000
34	Max Blind Segment Size	The maximum size of each segment of a blind message. (The full message may be longer than the segment, especially in a large network.) A *blind message* is a message the local node sends to the far end node when you execute **addtrk**. If the trunk has many errors, smaller message segments increase the possibility of a successful **addtrk**. Under normal conditions, this parameter should remain the default.	3570
35	Max XmtMemBlks Per NIB	Maximum number of memory blocks available for messages that are awaiting transmission. Under normal conditions, this parameter should remain the default.	3000
36	Max Mem Stby Update Q Size	Maximum number of update messages that can reside in queues awaiting transmission to the standby processor. This percentage is used to determine when to flush the standby message queue when the percentage is reached. Only rare circumstances could provide a reason to change this parameter, so do not change it without first consulting the TAC.	5000

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
37	Trk Cell Rtng Restrict	Specifies whether or not trunks on a UXM on an IGX node can route only cell traffic. The Trk Cell Rtng Restrict parameter lets you specify a default for an option to the **addcon** command; that is, you can specify what the **addcon** parameter "Trunk cell routing restricted" prompts the user as a default, for example: "Trunk cell routing restricted? y/n [y]" or "Trunk cell routing restricted? y/n [n]." If "n" is specified, then FastPacket-based routing is used. When adding or configuring ATM connections, this prompt will display for all connections (for example, CBR, ABR, UBR, and so on) except for real-time VBR (rt-VBR) connections because rt-VBR connections should not be routed over FastPacket trunks.	Yes/No
38	Stat Config Proc Cnt	Stat Config Proc Cnt is the number of statistics that will be enabled before pausing and allowing other processes to run. The default value of 1000 specifies that 1000 statistics should be enabled. But the count is checked only once for every object, so if the number of objects exceeds the count there will be one statistic enabled for each object. For example, if there are 1000 connections and the default count is set, one statistic will be enabled for each connection before pausing. If there are 2000 connections, one statistic will be enabled for each connection, then the number of statistics enabled (2000) will be compared to the count (1000). Since the number enabled exceeds the count, the enabling of statistics will pause.	1000 (where count is between 1 and 100000)
39	Stat Config Proc Delay	Specifies the amount of time in milliseconds (ms) that statistics processing pauses between enabling passes. On a heavily loaded switch, you may increase this number to reduce the load when enabling statistics, but the enabling process takes longer. The total (approximate) amount of time to process a statistics-enable request is calculated as shown below: total_time = (num_of_stats / count_per_pass) * delay_per_pass where num_of_stats is the sum of all statistics for this switch (conns * conn stats + lines * line stats + ...) count_per_pass is described above delay_per_pass is described above Using an example of a switch with 1000 connections (10 statistics per connection), three trunks (10 statistics per trunk), 10 ports (10 statistics per port), and the default settings (count = 1000, delay = 2000 msec) yields the following: total_time = ([(1000 * 10) + (3 * 10) + (10 * 10)] / 1000 * 2000 = (10130 / 1000) * 2000 = 11 * 2000 = 22000 msec = 22 seconds	2000 (where delay is between 50 and 60000 ms)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
40	Enable Degraded Mode	Enables or disables the rebuild-prevention feature on the node. Enabling this parameter causes a graceful switchover of the active controller card without having to do a rebuild. User connections and user traffic are maintained even when bugs or system overload would cause repeated aborts. Remaining updates are completed as fast as possible without affecting existing connections. If this parameter is disabled and an abort occurs during the update of the standby processor, the node rebuilds. Note that on the IGX, the active/standby/fail lights on the active card do not flash (as they do on the BPX node to indicate that the node is in degraded mode). If enabled, an abort condition will transition the node into degraded mode rather than rebuilding the node. You can disable this parameter (it is enabled by default) so that an abort will result in a rebuild. After degraded has been entered, a minimal set of functionality is available. (See the "High Priority Login" section for more information.) Disabled functions include provisioning and routing, network communications, event logging, and LAN access. However, connections continue to pass traffic. Once in degraded mode, a configurable parameter indicates whether to switch to the standby once it's ready. If Enable Degraded Mode is enabled (Y), an abort condition will transition the node into degraded mode rather than rebuilding the node. You can disable this parameter so that an abort will result in a node rebuild.	Y (enabled)
41	Enable Feeder Alert	When degraded mode is entered, this parameter is set to yes, then a message is sent to the MGX 8220 interface shelves to update the nodes' status so that connections will not fail. This parameter works in conjunction with degraded mode parameters (for example, Auto Switch on Degrade). If Enable Feeder Alert is disabled (the default) or, due to network congestion, the messages cannot be exchanged between the hub and the feeder to disable LMI, manual intervention can still be achieved by using the **addfdrlp** and **delfdrlp** commands on the BPX. (Note that **addfdrlp** and **delfdrlp** commands are service-level commands and can be used only by Cisco personnel.)	[No is default] Yes/No
42	Trk Cell Rtng Restrict	Specifies whether connections can be routed using cell-based trunks only. The Trk Cell Rtng Restrict parameter lets you specify a default for an option to the **addcon** command; that is, you can specify what the **addcon** parameter "Trunk cell routing restricted" prompts the user as a default, for example: "Trunk cell routing restricted? y/n [y]" or "Trunk cell routing restricted? y/n [n]". If "n" is specified, then FastPacket-based routing is used.	Yes/No

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
43	Enable Reroute on Comm Fail	Default value is False. If there is communication failure, the node will not send the topology update message to the other nodes. If the value is set to True, the node will send out a line change message and the remote nodes (master/slave) will deroute/condition the connections. You would sometimes use this parameter in conjunction with the A-bit Notifications on LMI/ILMI Interface feature (which you enable with the **cnfnodeparm** SuperUser command). See the A-bit Notifications feature description in the *Cisco WAN Switching Command Reference*.	[F] (T/F)
44	Auto Switch on Degrade	When degraded mode is entered, the standby card is updated and ready. If the default is enabled (yes) then the card switchover happens automatically. If this parameter is set to yes, when degraded mode is entered, then the standby card is ready, and the card switchover happens automatically. After a node has entered degraded mode (see Enable Degraded Mode parameter), this parameter indicates whether to switch to the standby card once it is ready. The default setting is to enable switching. You can set this parameter to disable switching if you want to allow further time to diagnose the problem rather than switching to the other processor, or to stop switching due to repeated aborts.	[Yes is default] Yes/No
45	Max Degraded Aborts	Use this parameter to determine the maximum frequency with which degraded mode aborts can occur before some other action is taken. In other words, they will be used to threshold degraded mode aborts. Another action could be a full rebuild, or it could be entering degraded mode. The allowable configurable range is shown in the Default column to the right. This parameter indicates the maximum number of aborts while in the degraded state. In the case where the processor continues to reset while in degraded mode, each reset will result in the processor staying in degraded mode unless this threshold has been reached, in which case the next reset will cause a full rebuild of the node. The desired result is to avoid infinite aborts while in degraded mode, which would essentially lock the node indefinitely. You can set Max Degraded Aborts to its maximum value (255) to indicate that the processor will be allowed to abort indefinitely without going through a full rebuild. This approach can be used to avoid a full rebuild (which will impact the user plane) until an appropriate time is reached when it may be reset or replaced.	100 is default (range is 0–100 or 255 (infinite)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
46	Max Hitless Rebuild Count	Use this parameter to determine the maximum frequency with which hitless rebuilds can occur before some other action is taken. In other words, they will be used to threshold hitless rebuilds. Another action could be a full rebuild, or it could be entering degraded mode. The allowable configurable range is shown in the Default column to the right. For example, using the default values of 100 for Max Hitless Rebuild Count and 1000 hours Hitless Counter Reset Time, a maximum of 100 hitless rebuilds can occur within a 1000 hour period before it is determined that degraded mode should be entered. For each hitless rebuild that occurs, if 1000 hours pass without the maximum hitless rebuild count having been exceeded, then that hitless rebuild will have aged beyond the point where it is still considered for thresholding purposes. If the maximum hitless rebuild count is set to “255” for “infinite,” then an unlimited number of hitless rebuilds can occur without the thresholding mechanism triggering a full rebuild or a change to degraded mode. In this case, the configurable hitless counter reset time will be ignored, no full rebuilds will be automatically performed. This allows you to determine when the best time is to manually perform a full rebuild, probably during a period of low traffic. At the other extreme, if the maximum hitless rebuild is set to zero, then no hitless rebuilds will be attempted. This disables the feature. When the configurable parameters Max Hitless Rebuild Count and Hitless Counter Reset Time are reconfigured, then the statistical counters for hitless rebuilds will be reset. The Max Hitless Rebuild Count and Hitless Counter Reset Time are stored in BRAM.	100 (range is 0–100 or 255 (infinite)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
47	Hitless Counter Reset Time	Use this parameter to determine the maximum frequency with which hitless rebuilds can occur before some other action is taken. In other words, they will be used to threshold hitless rebuilds. Another action could be a full rebuild, or it could be entering degraded mode. The allowable configurable range is shown in the Default column to the right. For example, using the default values of 100 for Max Hitless Rebuild Count and 1000 hours Hitless Counter Reset Time, a maximum of 100 hitless rebuilds can occur within a 1000 hour period before it is determined that degraded mode should be entered. For each hitless rebuild that occurs, if 1000 hours pass without the maximum hitless rebuild count having been exceeded, then that hitless rebuild will have aged beyond the point where it is still considered for thresholding purposes. If the maximum hitless rebuild count is set to “255” for “infinite”, then an unlimited number of hitless rebuilds can occur without the thresholding mechanism triggering a full rebuild or a change to degraded mode. In this case, the configurable hitless counter reset time will be ignored, no full rebuilds will be automatically performed. This allows you to determine when the best time is to manually perform a full rebuild, probably during a period of low traffic. At the other extreme, if the maximum hitless rebuild is set to zero, then no hitless rebuilds will be attempted. This disables the feature. When the configurable parameters Max Hitless Rebuild Count and Hitless Counter Reset Time are reconfigured, then the statistical counters for hitless rebuilds will be reset. The Max Hitless Rebuild Count and Hitless Counter Reset Time are new in Release 9.2, and will be stored in BRAM.	1000 hours (range is 1–1000)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
48	Send A-bit Early	Specifies whether A-bit is sent on deroute. The default is set to no initially. If you issue this command again, the prompt then shows the previously provisioned value. Use the Send A-bit Early parameter (option 48) to enable or disable the A-bit Notifications feature. (The default is N, which means the A-bit Notifications feature is disabled.) If the Send A-bit Early parameter is set to N, then the settings for parameter 49 (A-bit Timer Multiplier M) and parameter 50 (A-bit Timer Granularity N) are ignored and have no effect. After you enable the Send A-bit Early parameter by setting it to yes, you can set the A-bit Timer Granularity N and A-bit Timer Multiplier M parameters. The Send A-bit Early parameter works on conjunction with the A-bit Timer Multiplier M and A-bit Timer Granularity N parameters. You must set the Send A-bit Early parameter to yes to enable it, then you can set the A-bit Timer Multiplier M and A-bit Timer Granularity N parameters. The different A-bit behavior in Release 9.2 and higher is completely local to the node and is applicable to the master and slave ends of connections when the connections are derouted. When only one of the nodes connected by a connection has the Send A-bit Early enabled (set to Y), the timing in which that the A-bit notification feature is sent at one end of the connection may be drastically different from the other end of the connection. Thus, it is recommended that the Send A-bit Early parameter be configured the same on all nodes. For more information on the Send A-bit Notification on ILMI/LMI using Configurable Timer feature, refer to the *BPX 8600 Series Installation and Configuration Manual*.	[N is default] (Y/N)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
49	A-bit Timer Multiplier M	The A-bit Timer Multiplier M and A-bit Timer Granularity N parameters are used in conjunction with the Send A-bit Early parameter. You must set the Send A-bit Early parameter to yes to enable it, then you can set A-bit Timer Multiplier M and A-bit Timer Granularity N parameters. You can set the A-bit Timer Multiplier M option from 0 to 100. The default value is 0. When you execute the **cnfnodeparm** command, the prompt shows the previously configured value, or the default value if no upgrade or no configuration on these values was done previously. A value X is the time to wait before A-bit = 0 is sent out if the connection is in a derouted state. A connection derouted at a time period between 0 and N will send out A-bit = 0 at a time between X and X + N, if the connection continues to be in a derouted state. In cases where there are many A-bit status changes to report to the CPE, the last A-bit updates may be delayed much longer because A-bit updates process about 47 connections per second. To make a compromise between performance and the granularity of timers, A-bit Timer Multiplier N can be configured to be from 3 to 255 seconds. The bigger the value of N, the better the system performance will be. The value of X is M * N (A-bit Timer Multiplier M * A-bit Timer Granularity N values). To compromise between performance and the granularity of timers, N can be configured to be from 3 to 255 seconds; the bigger the value of N, the better the system performance will be. The value of X (M * N) is set such that M can be configured to be from 0 to 100. The default value for N is 3 seconds. The default value for M is 0, meaning A-bit = 0 sent out on deroute. It is recommended that the value of X (value of A-bit Timer Multiplier M * value of A-bit Timer Granularity N) be set such that when a trunk fails, the connections are given sufficient time to reroute successfully, avoiding the need to send out A-bit = 0. If the value of X is set to be smaller than the normal time to reroute connections when a trunk fails, the time to complete rerouting them may take longer. This can happen for line cards and feeder trunks that have LMI/ILMI protocol runs on those cards, such as BXM on BPX and Frame Relay cards on IGX. Note that it takes time for those cards to process A-bit status information for each connection coming from controller card through Comm Bus messages. To follow the general Release 9.2 interoperability, it is recommended that the A-bit Notifications feature not be used when the standby control processor is in a locked state.	[Default is 0] (D)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
50	A-bit Timer Granularity N	You can set the A-bit Timer Granularity N option from 3 to 255 seconds. The default value is 3 seconds. You use the A-bit Timer Granularity N and A-bit Timer Multiplier M parameters in conjunction with the Send A-bit Early parameter to configure the Early A-bit Notifications on LMI/ILMI Interface using Configurable Timer feature in Release 9.2 and beyond. (The Send A-bit Early parameter must be enabled before you can set the A-bit Timer Multiplier M and A-bit Timer Granularity N parameters.) The Early A-bit Notifications feature lets the user specify the timer interval to wait before A-bit = 0 is sent out if a connection fails to reroute and is in the derouted state too long. No precise timer is kept for each connection. Instead, all connections derouted during a certain time period go to the same bucket. This time period is N, which defines the granularity of the timers, and is specified by the A-bit Timer Granularity N parameter. Also, the value X is the time to wait before A-bit = 0 is sent out if the connection is in a derouted state. A connection that is derouted at a time period between 0 and N will send out A-bit = 0 at a time between X and X + N if the connection continues to be in a derouted state. In cases where there are many A-bit status changes to report to the CPE, the last A-bit updates may be delayed much longer because A-bit updates process about 47 connections per second. To compromise between performance and the granularity of timers, you can configure the N value (A-bit Timer Granularity N) to be from 3 to 255 seconds. The bigger the value of N, the better the system performance will be. The value of X should be M * N, where M can be configured to be from 0 to 100. The default value for N (specified by the A-bit Timer Multiplier N parameter) is 3 seconds. The default value for M is 0, meaning that A-bit = 0 is sent out on deroute. It is recommended that the value of X (A-bit Timer Multiplier M value * A-bit Timer Granularity N value) be set such that when a trunk fails, the connections are given sufficient time to reroute successfully, avoiding the need to send out A-bit = 0.	[Default is 3 seconds]
51	Cambric Hop Weight	In order to do concentric Come Break clearing, nodes are ordered by hop count as well as by the time they have been waiting for the Come Break test. This ensures that the running of route op if no topology change was detected does not change the order of testing. Also, distant nodes are guaranteed to be tested after a finite time regardless of how many nodes go in and out of Comm Break. The function used is: h * w - s Where **h** is the number of hops a node is away, **s** is the number of second since it is in Comm Break (and not in path fail), **w** is the ComBrk Hop Weight.	[25 is the default] (D)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-30 IGX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
52	CB Fail Penalty Hops	A node that fails a Comm Break test is entered into the list mentioned in the previous description of ComBrk Hop Weight, plus a penalty. The penalty is at least p * w, where **p** (by default 2) is configurable as the CB Fail Penalty Hops parameter. This means the node gets another chance after p rings have been tested. In the old way the node did not get another chance after all nodes had been tested.	[2 is the default] (D)
53	Download LAN IP or Network IP Address	Specifies whether to use the configured LAN IP or Network IP address as the Management IP Address to be used for ILMI Neighbor Discovery procedure.	[Lan is the default] (Lan/Nw)

* Enter value in either decimal (D) or hexadecimal (H).

Figure 1-24 shows the available parameters on an IGX node.

Figure 1-24 cnfnodeparm—Using parameter 53 for ILMI Neighbor Discovery on UXM (IGX) Node

```
bot TN    Cisco           IGX 8420  9.3.10 June 7 2000  07:01 GMT

31 FRP Link Status Alarm  [    Y] (Y/N) 46 Modem polling timer    [    1] (D)
32 Job Lock Timeout       [    0] (D)   47 Verify CBA for non-FRP [    N] (Y/N)
33 Max Via LCONs          [20000] (D)   48 Send Abit early        [    N] (Y/N)
34 Max Blind Segment Size [ 3570] (D)   49 Abit Tmr Multiplier  M [    0] (D)
35 Max XmtMemBlks per NIB [ 3000] (D)   50 Abit Tmr Granularity N [    3] (D)
36 Max Mem on Stby Q (%)  [   33] (D)   51 CommBrk Hop Weight     [   25] (D)
37 Trk Cell Rtng Restrict [    Y] (Y/N) 52 CB Fail Penalty Hops   [    2] (D)
38 Stat Config Proc Cnt   [ 1000] (D)   53 Dnld LanIP or NwIP     [ Lan](Lan/Nw)
39 Stat Config Proc Delay [ 2000] (D)
40 Enable Degraded Mode   [    Y] (Y/N)
41 Enable Rrt on Comm Fail[    N] (Y/N)
42 Auto Switch on Degrade [    Y] (Y/N)
43 Max Degraded Aborts    [  100] (D)
44 Max Htls Rebuild Count [  100] (D)
45 Htls Counter Reset Time[ 1000] (D)

This Command: cnfnodeparm 53


Enter 0 (LanIP) or 1 (NwIP):
```

Table 1-31 BPX cnfnodeparm Parameters

Index	Parameter	Description	Default
1	Update Initial Delay (sec.)	This delay, multiplied times the number of nodes in the network, is the delay before conditional updates are transmitted to the network after a BCC switchover.	5000 seconds
2	Update Per-Node Delay (ms.)	Delay between transmission of conditional updates to nodes.	30000 msecs
3	Comm. Break Test Delay (ms.)	Interval between tests for communication breaks on any node.	3000 msecs
4	Comm. Break Test Offset	Factor between number of communication test failures and successful tests to declare a node in communication break condition.	10 (D)
5	Network Time-out Period	The time a node waits for a response to a communication test transmission before it declares a failure. Four failures allowed.	1700 (D)
6	Network Inter-p Period	The time a node waits for a response to a communication test transmission on inter-domain connections before it declares a failure. The maximum number of failures is four.	4000 (D)
7	NW Sliding Window Size	Controls the number of BCC messages that can be transmitted simultaneously. Defines number of “no acknowledgments outstanding” on a controller before NACKS declared.	1 (D)
8	Num. Normal Time-outs	Number of normal network retransmissions allowed before issuing a communication break condition (for intra-domain connections).	7 (D)
9	Num. Inter-p Time-outs	Number of normal network retransmissions allowed before issuing a communication break condition (for inter-domain connections).	3 (D)
10	Num. Satellite Time-outs	Number of satellite network retransmissions allowed before issuing a communication break.	6 (D)
11	Number of Blind Time-outs	Maximum number of communication fail time-outs and retransmissions performed when using the blind channel. “Blind” refers to the message being sent across the trunk without knowing what node is on the other end of the trunk. The Comm Fail test uses this blind channel.	4 (D)
12	Number of CB Msg Time-outs	Number of communication break time-outs and retransmissions before declaring a communication break (CB) condition. One successful acknowledgment clears CB.	2 (D)
13	Comm. Fail Interval (ms.)	Minimum time allocated for communication fail testing of all trunks terminating on the current node.	10,000 (D)
14	Comm. Fail Multiplier	Number of Comm. Fail Intervals to skip for good lines.	3 (D)
15	CC Redundancy Configured	Yes indicates a redundant controller card is required to prevent an alarm.	Y
16	Stats Memory (x 100 KB)	The amount of controller memory to allocate to statistics collection.	132 (D)
17	Standby Update Timer	Determines how often to send update messages to a standby controller.	10 (D)
18	Stby Updts Per Pass	Number of messages that can be sent to standby NPC for each update interval.	50 (D)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
19	Gateway ID Timer	An inter-domain rerouting timer. How often to look for junction nodes for new route.	30 (D)
20	GLCON Alloc Timer	Another inter-domain rerouting timer controlling the gateway LCON function.	30 (D)
21	Comm Fail Delay	Number of seconds before starting to detect communication failures after a controller switchover.	60 (D)
22	Nw. Hdlr Timer (msec)	Network handler timer determines how long to wait to send messages to or receive messages from a remote node.	50 (D)
23	SAR CC Transmit Rate	Transmit data rate for BCC traffic to standby BCC (Kbps).	560 (D)
24	SAR High Transmit Rate	Transmit data rate for BCC traffic to other BCC nodes (Kbps).	280 (D)
25	SAR Low Transmit Rate	Transmit data rate for BCC traffic to ICC nodes (Kbps).	56 (D)
26	SAR VRAM Cngestn Limit	The threshold for BCC traffic receive queue congestion that causes cell discards.	7680 (D)
27	SAR VRAM Cell Discard	BCC traffic receive queue discard amount in cells.	256 (D)
28	ASM Card Cnfged	Yes indicates an Alarm/Status Monitor card is required or an alarm will be generated.	Y
29	TFTP Grant Delay (sec)	The number of seconds the node waits before resending a TFTP request after a TFTP error has occurred. This field is display-only; you set the value in Cisco WAN Manager.	1
30	TFTP ACK Timeout (sec)	The number of seconds the node waits for an acknowledgment of a TFTP request before it declares the request as timed out. This field is display-only; you set the value in Cisco WAN Manager.	10
31	TFTP Write Retries	The number of times the node retries a TFTP operation (not just writes) after a failed attempt. This field is display-only; you set the value in Cisco WAN Manager.	3
32	SNMP Event logging	Enables maintenance logging of global SNMP messages. These SNMP events are not errors but any GET, SET, and so on. Output goes to a printer connected to the node's auxiliary port or a terminal server (accessible via telnet). Without a connected output device, the parameter is meaningless.	y=yes
33	Job Lock Timeout	The range is 1–1000 seconds. The default of 0 disables this parameter.	60
34	Max Via LCONs	The maximum number of "via" connections a via node can support. The default is the maximum for the node and should remain the default under normal operating conditions.	50000
35	Max Blind Segment Size	The maximum size of each segment of a blind message. (The full message may be longer than the segment, especially in a large network.) A *blind message* is a message the local node sends to the far end node when you execute **addtrk**. If the trunk has many errors, smaller message segments increase the possibility of a successful **addtrk**. Under normal conditions, this parameter should remain the default.	3570

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
36	Max XmtMemBlks Per NIB	Maximum number of memory blocks available for messages that are awaiting transmission. Under normal conditions, this parameter should remain the default.	3000
37	Max Mem on Stby Q (%)	Maximum number of update messages that can reside in queues awaiting transmission to the standby processor. This percentage is used to determine when to flush the standby message queue when the percentage is reached. Only rare circumstances could provide a reason to change this parameter, so do not change it without first consulting the TAC.	5000
38	Stat Config Proc Cnt	Stat Config Proc Cnt is the number of statistics that will be enabled before pausing and allowing other processes to run. The default value of 1000 specifies that 1000 statistics should be enabled. But the count is checked only once for every object, so if the number of objects exceeds the count there will be one statistic enabled for each object. For example, if there are 1000 connections and the default count is set, one statistic will be enabled for each connection before pausing. If there are 2000 connections, one statistic will be enabled for each connection, then the number of statistics enabled (2000) will be compared to the count (1000). Since the number enabled exceeds the count, the enabling of statistics will pause.	1000 (where count is between 1 and 100000)
39	Stat Config Proc Delay	Specifies the amount of time in milliseconds (ms) that statistics processing pauses between enabling passes. On a heavily loaded switch, you may increase this number to reduce the load when enabling statistics, but the enabling process takes longer. The total (approximate) amount of time to process a statistics-enable request is calculated as shown below: total_time = (num_of_stats / count_per_pass) * delay_per_pass where num_of_stats is the sum of all statistics for this switch (conns * conn stats + lines * line stats + ...) count_per_pass is described above delay_per_pass is described above Using an example of a switch with 1000 connections (10 statistics per connection), three trunks (10 statistics per trunk), 10 ports (10 statistics per port), and the default settings (count = 1000, delay = 2000 msec) yields the following: total_time = ([(1000 * 10) + (3 * 10) + (10 * 10)] / 1000 * 2000 = (10130 / 1000) * 2000 = 11 * 2000 = 22000 msec = 22 seconds	2000 (where delay is between 50 and 60000 ms)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
40	Enable Degraded Mode	Enables or disables the rebuild-prevention feature on the node. Enabling this parameter causes a graceful switchover of the active controller card without having to do a rebuild. User connections and user traffic are maintained even when bugs or system overload would cause repeated aborts. Remaining updates are completed as fast as possible without affecting existing connections. If this parameter is disabled and an abort occurs during the update of the standby processor, the node rebuilds. On the BPX, the active/standby/fail lights on the active card flash at the same time indicating the node is in degraded mode.	No (disabled)
41	Trk Cell Rtng Restrict	Specifies whether connections can be routed using cell-based trunks only. The Trk Cell Rtng Restrict parameter lets you specify a default for an option to the **addcon** command; that is, you can specify what the **addcon** parameter "Trunk cell routing restricted" prompts the user as a default, for example: "Trunk cell routing restricted? y/n [y]" or "Trunk cell routing restricted? y/n [n]". If "n" is specified, then FastPacket-based routing is used.	Yes/No
42	Enable Feeder Alert	When degraded mode is entered, this parameter is set to yes, then a message is sent to the MGX 8220 interface shelves to update the nodes' status so that connections will not fail. This parameter works in conjunction with degraded mode parameters (for example, Auto Switch on Degrade). If Enable Feeder Alert is disabled (the default) or, due to network congestion, the messages cannot be exchanged between the hub and the feeder to disable LMI, manual intervention can still be achieved by using the **addfdrlp** and **delfdrlp** commands on the BPX. (Note that **addfdrlp** and **delfdrlp** commands are service-level commands and can be used only by Cisco personnel.)	[No is default] Yes/No
43	Reroute on Comm Failure	Default value is False. If there is communication failure, the node will not send the topology update message to the other nodes. If the value is set to True, the node will send out a line change message and the remote nodes (master/slave) will deroute/condition the connections. You would sometimes use this parameter in conjunction with the A-bit Notifications on LMI/ILMI Interface feature (which you enable with the **cnfnodeparm** SuperUser command). For information about the A-bit Notifications feature, see the *Cisco WAN Switch Command Reference*.	True/False
44	Auto Switch on Degrade	When degraded mode is entered, the standby card is updated and ready. If the default is enabled (yes) then the card switchover happens automatically. If this parameter is set to yes, when degraded mode is entered, then the standby card is ready, and the card switchover happens automatically.	[Yes is default] Yes/No

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
45	Max Degraded Aborts	Use this parameter to determine the maximum frequency with which degraded mode aborts can occur before some other action is taken. In other words, they will be used to threshold degraded mode aborts. Another action could be a full rebuild, or it could be entering degraded mode. The allowable configurable range is shown in the Default column to the right. For example, using the default values of 100 for Max Hitless Rebuild Count, and 1000 hours Hitless Counter Reset Time, a maximum of 100 hitless rebuilds can occur within a 1000 hour period before it is determined that degraded mode should be entered. For each hitless rebuild that occurs, if 1000 hours pass without the maximum hitless rebuild count having been exceeded, then that hitless rebuild will have aged beyond the point where it is still considered for thresholding purposes.	100 is default (range is 0–100 or 255 (infinite)
46	Max Hitless Rebuild Count	Use this parameter to determine the maximum frequency with which hitless rebuilds can occur before some other action is taken. In other words, they will be used to threshold hitless rebuilds. Another action could be a full rebuild, or it could be entering degraded mode. The allowable configurable range is shown in the Default column to the right. For example, using the default values of 100 for Max Hitless Rebuild Count, 1000 hours Hitless Counter Reset Time, a maximum of 100 hitless rebuilds can occur within a 1000 hour period before it is determined that degraded mode should be entered. For each hitless rebuild that occurs, if 1000 hours pass without the maximum hitless rebuild count having been exceeded, then that hitless rebuild will have aged beyond the point where it is still considered for thresholding purposes. If the maximum hitless rebuild counts is set to "255" for "infinite," then an unlimited number of hitless rebuilds can occur without the thresholding mechanism triggering a full rebuild or a change to degraded mode. In this case, the configurable hitless counter reset time will be ignored, no full rebuilds will be automatically performed. This allows you to determine when the best time is to manually perform a full rebuild, probably during a period of low traffic. At the other extreme, if the maximum hitless rebuild is set to zero, then no hitless rebuilds will be attempted. This disables the feature. When the configurable parameters Max Hitless Rebuild Count and Hitless Counter Reset Time are reconfigured, then the statistical counters for hitless rebuilds will be reset. The Max Hitless Rebuild Count and Hitless Counter Reset Time are stored in BRAM.	100 (range is 0–100 or 255 (infinite)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
47	Hitless Counter Reset Time	Use this parameter to determine the maximum frequency with which hitless rebuilds may occur before some other action is taken. In other words, they will be used to threshold hitless rebuilds. Some other action could be a full rebuild, or it could be entering degraded mode. The allowable configurable range is shown in the Default column to the right. For example, using the default values of 100 for Max Hitless Rebuild Count, 1000 hours Hitless Counter Reset Time, a maximum of 100 hitless rebuilds may occur within a 1000 hour period before it is determined that degraded mode should be entered. For each hitless rebuild that occurs, if 1000 hours pass without the maximum hitless rebuild count having been exceeded, then that hitless rebuild will have aged beyond the point where it is still considered for thresholding purposes.	1000 hours (range is 1–1000)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
48	Send A-bit Early	Specifies whether A-bit is sent on deroute. The default is set to no initially. If you issue this command again, the prompt then shows the previously provisioned value. Use the Send A-bit Early parameter (option 48) to enable or disable the A-bit Notifications feature. (The default is N which means the A-bit Notifications feature is disabled.) If the Send A-bit Early parameter is set to N, then the settings for parameter 49 (A-bit Timer Multiplier M) and parameter 50 (A-bit Timer Granularity N) are ignored and have no effect. After you enable the Send A-bit Early parameter by setting it to yes, you can set the A-bit Timer Granularity N and A-bit Timer Multiplier M parameters. The Send A-bit Early parameter works in conjunction with the A-bit Timer Multiplier M and A-bit Timer Granularity N parameters. You must set the Send A-bit Early parameter to yes to enable it, then you can set the A-bit Timer Multiplier M and A-bit Timer Granularity N parameters. Note that a pre-Release 9.1.07 node or Release 9.1.07 node with the Release 9.1.07 **cnfnodeparm** Send A-bit immediately parameter turned off behaves the same way as a Release 9.2 node with the Early A-bit Notifications on ILMI/LMI Interface using Configurable Timer feature disabled. A 9.1.07 node with the **cnfnodeparm** Send A-bit immediately parameter turned on behaves the same as a Release 9.2 node with the Send A-bit Early (option 48 in **cnfnodeparm**) set to yes and the A-bit Timer Multiplier M (option 49 in **cnfnodeparm**) set to 0. The different A-bit behavior in Release 9.2 is completely local to the node and is applicable to the master and slave ends of connections when the connections are derouted. When only one of the nodes connected by a connection has the Send A-bit Early enabled (set to Y), the timing in which that the A-bit notification feature is sent at one end of the connection may be drastically different from the other end of the connection. Thus, it is recommended that the Send A-bit Early parameter be configured the same on all nodes. For more information on the Send A-bit Notification on ILMI/LMI using Configurable Timer feature, refer to the *BPX 8600 Series Installation and Configuration* manual.	[N is default] (Y/N)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
49	A-bit Timer Multiplier M	The A-bit Timer Multiplier M and A-bit Timer Granularity N parameters are used in conjunction with the Send A-bit Early parameter. You must set the Send A-bit Early parameter to yes to enable it, then you can set A-bit Timer Multiplier M and A-bit Timer Granularity N parameters. You can set the A-bit Timer Multiplier M option from 0 to 100. The default value is 0. When you execute the **cnfnodeparm** command, the prompt shows the previously configured value, or the default value if no upgrade or no configuration on these values was done previously. A value X is the time to wait before A-bit = 0 is sent out if the connection is in a derouted state. A connection derouted at a time period between 0 and N will send out A-bit = 0 at a time between X and X + N, if the connection continues to be in a derouted state. In cases where there are many A-bit status changes to report to the CPE, the last A-bit updates may be delayed much longer because A-bit updates process about 47 connections per second. To make a compromise between performance and the granularity of timers, A-bit Timer Multiplier N can be configured to be from 3 to 255 seconds. The bigger the value of N, the better the system performance will be. The value of X is M * N (A-bit Timer Multiplier M * A-bit Timer Granularity N values). To compromise between performance and the granularity of timers, N can be configured to be from 3 to 255 seconds; the bigger the value of N, the better the system performance will be. The value of X (M * N) is set such that M can be configured to be from 0 to 100. The default value for N is 3 seconds. The default value for M is 0, meaning A-bit = 0 sent out on deroute. It is recommended that the value of X (value of A-bit Timer Multiplier M * value of A-bit Timer Granularity N) be set such that when a trunk fails, the connections are given sufficient time to reroute successfully, avoiding the need to send out A-bit = 0. If the value of X is set to be smaller than the normal time to reroute connections when a trunk fails, the time to complete rerouting them may take longer. This can happen for line cards and feeder trunks that have LMI/ILMI protocol runs on those cards, such as BXM on BPX and Frame Relay cards on IGX. Note that it takes time for those cards to process A-bit status information for each connection coming from controller card through CommBus messages. Note that a pre-Release 9.1.07 node or a 9.1.07 node with the Send A-bit Early parameter turned off behaves the same way as a Release 9.2 node with the Release 9.2 Early A-bit Notifications feature disabled. A 9.1.07 node with the Send A-bit Early parameter turned on behaves the same way as a Release 9.2 node with the Send A-bit Early parameter set to on, and the A-bit Timer Multiplier M parameter set to 0. To follow the general Release 9.2 interoperability, it is recommended that the A-bit Notifications feature not be used when the standby control processor is in a locked state.	[Default is 0] (D)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
50	A-bit Timer Granularity N	You can set the A-bit Timer Granularity N option from 3 to 255 seconds. The default value is 3 seconds. You use the A-bit Timer Granularity N and A-bit Timer Multiplier M parameters in conjunction with the Send A-bit Early parameter to configure the Early A-bit Notifications on LMI/ILMI Interface using Configurable Timer feature in Release 9.2 and beyond. (The Send A-bit Early parameter must be enabled before you can set the A-bit Timer Multiplier M and A-bit Timer Granularity N parameters.) The Early A-bit Notifications feature lets the user specify the timer interval to wait before A-bit = 0 is sent out if a connection fails to reroute and is in the derouted state too long. No precise timer is kept for each connection. Instead, all connections derouted during a certain time period go to the same bucket. This time period is N, which defines the granularity of the timers, and is specified by the A-bit Timer Granularity N parameter. Also, the value X is the time to wait before A-bit = 0 is sent out if the connection is in a derouted state. A connection that is derouted at a time period between 0 and N will send out A-bit = 0 at a time between X and X + N if the connection continues to be in a derouted state. In cases where there are many A-bit status changes to report to the CPE, the last A-bit updates may be delayed much longer because A-bit updates process about 47 connections per second. To compromise between performance and the granularity of timers, you can configure the N value (A-bit Timer Granularity N) to be from 3 to 255 seconds. The bigger the value of N, the better the system performance will be. The value of X should be M * N, where M can be configured to be from 0 to 100. The default value for N (specified by the A-bit Timer Multiplier N parameter) is 3 seconds. The default value for M is 0, meaning that A-bit = 0 is sent out on deroute. It is recommended that the value of X (A-bit Timer Multiplier M value * A-bit Timer Granularity N value) be set such that when a trunk fails, the connections are given sufficient time to reroute successfully, avoiding the need to send out A-bit = 0.	[Default is 3 seconds]

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
51	FBTC with PPD Policing	If you have installed a BXM card with the Routing Control Monitoring and Policing (RCMP) chip, which supports PPD on policing, you may enable this feature by setting this parameter to Y. Older BXM cards do not support PPD on policing. After enabling this parameter, a warning appears: “Warning: Must switchyred or reset PPDPolic BXM line cards after change.” Note that these operations are not supported in remote NMS stations. Next you must choose one of two options by entering either Y or N: Y = BXM FBTC on thresholds and PPD policing. This option is supported only on BXM cards with the new version of the RCMP chip that provides this functionality. N = BXM FBTC on thresholds. Provides FBTC on CLP thresholds only. Although it is not recommended to use both an older BXM card and a BXM card that supports PPD on policing on a Y-redundant pair, you can do so. The severity of the feature mismatch is minor because FBTC can still function based on the CLP thresholds on the BXM card that does not support PPD on policing. This parameter is a one-time installation task; it should not be frequently changed.	[N is default] (Y/N)
52	CommBrk Hop Weight	In order to do concentric Comm Break clearing, nodes are ordered by hop count as well as by the time they have been waiting for the Comm Break test. This ensures that the running of route op if no topology change was detected does not change the order of testing. Also, distant nodes are guaranteed to be tested after a finite time regardless of how many nodes go in and out of Comm Break. The function used is: h * w - s Where **h** is the number of hops a node is away, **s** is the number of second since it is in Comm Break (and not in path fail), **w** is the ComBrk Hop Weight.	[25 is the default] (D)
53	CB Fail Penalty Hops	A node that fails a Comm Break test is entered into the list mentioned in the previous description of ComBrk Hop Weight, plus a penalty. The penalty is at least p * w, where **p** (by default 2) is configurable as the CB Fail Penalty Hops parameter. This means the node gets another chance after p rings have been tested. In the old way the node did not get another chance after all nodes had been tested.	[2 is the default] (D)
54	Auto BXM Upgrade	Used for legacy BXM to BXM-E upgrades. If the parameter is set to Y, SWSW upgrades the logical database as soon as both legacy BXMs are replaced by BXM-Es in yred case, or the active legacy BXM is replaced by a BXM-E in non-yred case. Set this parameter to N if you want to manually upgrade. Refer to the *BPX 8600 Installation and Configuration Guide*, *9.3.0 Release*, for upgrade scenarios and procedures.	[Y default is yes] (Y/N)

* Enter value in either decimal (D) or hexadecimal (H).

Table 1-31 BPX cnfnodeparm Parameters (continued)

Index	Parameter	Description	Default
55	LCN reprgrm batch cnt	Specifies the number of LCN(s) to be reprogrammed in a batch before giving up CPU. This is typically used for dynamic partitioning.	[100 is the default] (D)
56	Download LAN IP or Network IP Address	Specifies whether to use the configured LAN IP or Network IP address as the Management IP Address to be used for ILMI Neighbor Discovery procedure.	[Nw is default] (Nw)

* Enter value in either decimal (D) or hexadecimal (H).

Figure 1-25 cnfnodeparm—Select LAN IP or NETW IP on BXM (BPX) Node

```
sw143          TN    Cisco       BPX 8620  9.3.10    Aug. 9 2000  16:25 GMT

31 TFTP Write Retries     [    3] (D)   46 Max Htls Rebuild Count [ 100] (D)
32 SNMP Event logging     [    Y] (Y/N) 47 Htls Counter Reset Time[1000] (D)
33 Job Lock Timeout       [   60] (D)   48 Send Abit early        [   N]
(Y/N)
34 Max Via LCONs          [50000] (D)   49 Abit Tmr Multiplier  M [   0] (D)
35 Max Blind Segment Size [ 3570] (D)   50 Abit Tmr Granularity N [   3] (D)
36 Max XmtMemBlks per NIB [ 3000] (D)   51 FBTC with PPDPolicing  [   N]
(Y/N)
37 Max Mem on Stby Q (%)  [   33] (D)   52 CommBrk Hop Weight     [  25] (D)
38 Stat Config Proc Cnt   [ 1000] (D)   53 CB Fail Penalty Hops   [   2] (D)
39 Stat Config Proc Delay [ 2000] (D)   54 Auto BXM upgrade       [   Y]
(Y/N)
40 Enable Degraded Mode   [    Y] (Y/N) 55 LCN reprgrm batch cnt  [ 100] (D)
41 Trk Cell Rtng Restrict [    Y] (Y/N) 56 Dnld LanIP or NwIP     [
1](Lan/Nw)
42 Enable Feeder Alert    [    N] (Y/N)
43 Reroute on Comm Fail   [    N] (Y/N)
44 Auto Switch on Degrade [    Y] (Y/N)
45 Max Degraded Aborts    [  100] (D)

This Command: cnfnodeparm 56
```

cnfnwip (Configure Network IP Address)

The **cnfnwip** command configures an IP address and subnet mask for the node.

Attributes

Jobs: No	Log: Yes	Lock: Yes	Node Type: IGX, BPX

Associated Commands

none

Syntax

cnfnwip <IPAddr> <IPSubnetMask>

<IPAddr>	IP address of the node: the format is *nnn.nnn.nnn.nnn*, where *nnn* can be 1–255
<IPSubnetMask>	subnet mask: the format is *nnn.nnn.nnn.nnn*

An example of this command is:

cnfnwip 199.35.96.217 255.255.255.0

where 199.35.96.217 is the IP address, and 255.255.255.0 is the subnet mask.

Function

The network IP address and subnet mask support statistics collection for Cisco WAN Manager. The **cnfnwip** command defines the IP address the system uses to pass messages between Cisco WAN Manager and the node. The Statistics Master process in Cisco WAN Manager Network collects statistics. The Statistics Manager requests and receives statistics using TFTP Get and Put messages. These TFTP messages pass between the node and the Statistics Master using IP Relay. (See the **cnfstatmast** description for details on setting the Statistics Master address.) For an example of the **cnfnwip** command, see the screen in Figure 1-26.

Figure 1-26 cnfnwip—Configure Network IP Address

```
axiom       TN    Bootzilla       IGX 32    9.2       Aug. 5 19981998  18:25 GMT

Active Network IP Address:             169.134.90.106
Active Network IP Subnet Mask:         255.255.255.0











Last Command: cnfnwip 169.134.90.106 255.255.255.0


Next Command:
```

cnfphyslnstats (Configure Physical Line Statistics)

The **cnfphyslnstats** command configures parameters for circuit line statistics collection. This is a debug command that applies to physical lines on a UXM that is using Inverse Multiplexing Over ATM (IMA)—a *logical trunk* or *logical line* configuration.

In Release 9.2, for virtual trunking, physical line statistics apply to each physical port. In the case of IMA trunks, the physical line statistics are tallied separately for each T1 port.

IMA physical line alarms are a special case. Each IMA trunk or line has a configurable number of retained links. If the number of non-alarmed lines is less than the number of retained links, the logical trunks on the IMA trunk or line are placed into major alarm.

For example, consider IMA virtual trunks 4.5-8.2 and 4.5-8.7, with the number of retained links on 4.5-8 configured to 2. If 4.5 and 4.6 go into LOS (loss of signal), physical line alarms are generated for these two physical lines. The logical trunks 4.5-8.2 do not go into alarm because the two retained links are still healthy. In this situation, the bandwidth on the logical trunks is adjusted downward to prevent cell drops, and the connections on those trunks are rerouted. If a third line goes into alarm, the logical trunks are then failed.

The **cnfphyslnstats** command lets you configure the following additional physical line statistics (which support the ATM Forum–compliant Version 1.0 IMA protocol). A summary and description of these statistics follows in Table 1-32.

Table 1-32 IMA Physical Line Statistics

Statistics Object	Definition
IV-IMA	ICP Violations: count of errored, invalid or missing ICP cells during non-SES-IMA or non-UAS-IMA conditions.
Near End Severely Errored Seconds (SES-IMA)	Count of one-second intervals containing ≥ 30% of the ICP cells counted as IV-IMAs (see note 1), or one or more link defects (e.g., LOS, OOF/LOF, AIS or LCD), LIF, LODS defects during non-UAS-IMA condition.
Far End Severely Errored Seconds (SES-IMA-FE)	Count of one-second intervals containing one or more RDI-IMA defects during non-UAS-IMA-FE condition.
Near End Unavailable Seconds (UAS-IMA)	Unavailable seconds: unavailability begins at the onset of 10 contiguous SES-IMA and ends at the onset of 10 contiguous seconds with no SES-IMA.
Far End Unavailable Seconds (UAS-IMA-FE)	Unavailable seconds at FE: unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the onset of 10 contiguous seconds with no SES-IMA-FE.
Near End Tx Unusable Seconds (Tx-UUS-IMA)	Tx Unusable seconds: count of Tx Unusable seconds at the NE LSM.
Near End Rx Unusable Seconds (Rx-UUS-IMA)	Rx Unusable seconds: count of Rx Unusable seconds at the NE LSM.
Far End Tx Unusable Seconds (Tx-UUS-IMA-FE)	Tx Unusable seconds at FE: count of seconds with Tx Unusable indications from the FE LSM.

Table 1-32 IMA Physical Line Statistics (continued)

Statistics Object	Definition
Far End Rx Unusable Seconds (Rx-UUS-IMA-FE)	Rx Unusable seconds at FE: count of seconds with Rx Unusable indications from the FE LSM.
Near End Tx No. of Failures (Tx-FC)	Count of NE Tx link failure alarm conditions.
Near End Rx No. of Failures (Rx-FC)	Count of NE Rx link failure alarm conditions.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX	Yes

Associated Commands

dspphyslnstats, dspphyslnstathist

Syntax

cnfphyslnstats <port> <line> <stat> <interval> <e|d> [<samples> <size> <peaks>]

<port>	Specifies the port with the physical line to configure.
<line>	Specifies the physical line to configure.
<stat>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<e|d>	Enables/disables a statistic. E to enable; D to disable.
[samples]	Specifies the number of samples to collect (1–255).
[size]	Specifies the number of bytes per data sample (1, 2, or 4).
[peaks]	Enables/disables the collection of ten second peaks. Y to enable; N disable.

Function

This command configures physical line statistics on a UXM card (see Figure 1-27). The **cnfphyslnstats** command lets you customize statistics collection on each physical line. It primarily applies to debugging and not standard network operation.

To see the statistics available for each type of interface, refer to the actual screens for each interface, as in the subsequent figures. Figure 1-28, Figure 1-29, Figure 1-30, Figure 1-31, and Figure 1-32 show the available statistics for an IMA line, OC-3/STM1, T3, E3, T1, and E1.

Figure 1-27 cnfphyslnstats—Configure Physical Line Statistics (IMA)

```
sw225          TRM   StrataCom       IGX 8420  9.3.a0    Mar. 8 2000  08:19 GMT

Line Statistic Types

  3) Out of Frames                       42) Cell Framing Errored Seconds
  4) Losses of Signal                    43) Cell Framing Sev. Err Secs.
  5) Frames Bit Errors                   44) Cell Framing Sec. Err Frame Secs
  6) CRC Errors                          45) Cell Framing Unavail. Secs.
 29) Line Code Violations                62) Total Cells Tx to line
 30) Line Errored Seconds                69) Total Cells Rx from line
 31) Line Severely Err Secs              98) Frame Sync Errors
 32) Line Parity Errors                 143) Cell Framing FEBE Err Secs
 33) Errored Seconds - Line             144) Cell Framing FEBE Sev. Err. Secs.
 34) Severely Err Secs - Line           151) Yellow Alarm Transition Count
 38) Severely Err Frame Secs            152) Cell Framing Yel Transitions
 40) Unavail. Seconds                   153) AIS Transition Count
 41) BIP-8 Code Violations              193) Loss of Cell Delineation
194) Loss of Pointer                    207) Section BIP8 Severely Err. Secs.
195) OC3 Path AIS                       208) Section Sev. Err. Framing Secs.
196) OC3 Path YEL                       209) Line BIP24 Severely Err. Secs.
197) Section BIP8                       210) Line FEBE Severely Err. Secs.
198) Line BIP24                         211) Path BIP8 Severely Err. Secs.
199) Line FEBE                          212) Path FEBE Severely Err. Secs.
200) Path BIP8                          213) Line Unavailable Secs.
201) Path FEBE                          214) Line Farend Unavailable Secs.
202) Section BIP8 Err. Secs.            215) Path Unavailable Secs.
203) Line BIP24 Err. Secs.              216) Path Farend Unavailable Secs.
204) Line FEBE Err. Secs.               217) HCS Uncorrectable Error
205) Path BIP8 Err. Secs.               218) HCS Correctable Error
206) Path FEBE Err. Secs.               219) INVMUX: line violations
220) INVMUX: Severely Err. Secs.
221) INVMUX: Farend Sev. Err. Secs.
222) INVMUX: Unavailable Secs.
223) INVMUX: Farend Unavail Secs.
224) INVMUX: Tx Unusable Seconds
225) INVMUX: Rx Unusable Seconds
226) INVMUX: Farend Tx Unusable Secs.
227) INVMUX: Farend Rx Unusable Secs.
228) INVMUX: Tx Failure Count
229) INVMUX: Rx Failure Count


Statistic Type:
Collection Interval (1 - 60 Minutes, in 1 minute increments):
'E' to Enable, 'D' to Disable:
Number of Data Samples (1 - 60):
Data Size (1, 2 or 4 Bytes):
Collect 10-second Peaks (Y/N)


Last Command: cnfphyslnstats 5.1 220 1 e 2 2 y

Next Command:
```

Figure 1-28 cnfphyslnstats—Configure Physical Line Statistics (OC-3)

```
sw228          TN    SuperUser       IGX 8420    9.2 Aug. 27 1998 18:11 PST

Line Statistic Types

  1) Bipolar Violations                  197) Section BIP8
  3) Out of Frames                       198) Line BIP24
  4) Losses of Signal                    199) Line FEBE
  5) Frames Bit Errors                   200) Path BIP8
  6) CRC Errors                          201) Path FEBE
 62) Total Cells Tx to line              202) Section BIP8 Err. Secs.
 69) Total Cells Rx from line            203) Line BIP24 Err. Secs.
151) Yellow Alarm Transition Count       204) Line FEBE Err. Secs.
153) AIS Transition Count                205) Path BIP8 Err. Secs.
193) Loss of Cell Delineation            206) Path FEBE Err. Secs.
194) Loss of Pointer                     207) Section BIP8 Severely Err. Secs.
195) OC-3 Path AIS                        208) Section Sev. Err. Framing Secs.
196) OC-3 Path YEL                        209) Line BIP24 Severely Err. Secs.

Last Command: cnfphyslnstats 6.2


Continue? y


sw228          TN    SuperUser       IGX 8420    9.2 Aug. 27 1998 18:11 PST

Line Statistic Types

210) Line FEBE Severely Err. Secs.
211) Path BIP8 Severely Err. Secs.
212) Path FEBE Severely Err. Secs.
213) Line Unavailable Secs.
214) Line Farend Unavailable Secs.
215) Path Unavailable Secs.
216) Path Farend Unavailable Secs.
217) HCS Uncorrectable Error
218) HCS Correctable Error




This Command: cnfphyslnstats 6.2
```

Figure 1-29 cnfphyslnstats—Configure Physical Line Statistics (T3)

```
sw224          TN    SuperUser       IGX 8420    9.2 Aug. 27 1998 16:19 GMT

Line Statistic Types

 3) Out of Frames                       40) Unavail. Seconds
 4) Loss of Signal                      41) BIP-8 Errors
 6) CRC Errors                          42) BIP-8 Errored Seconds
29) Line Code Violation                 43) BIP-8 Severely Err Secs.
30) Line Errored Seconds                44) Cell Framing Sev. Err Frame Secs
31) Line Severely Err Secs              45) Cell Framing Unavail. Secs.
32) Line Parity Errors                  98) PLCP OOF counts
33) Errored Seconds - Parity            141) FEBE Counts
34) Severely Err Secs - Parity          144) Cell Framing FEBE Sev. Err. Secs.
35) Path Parity Errors                  152) PLCP YEL Counts
36) Errored Secs - Path
37) Severely Err Secs - Path
38) Severely Err Frame Secs


This Command: cnfphyslnstats 8.1


Statistic Type:
```

Figure 1-30 cnfphyslnstats—Configure Physical Line Statistics (E3)

```
sw224          TN    SuperUser       IGX 8420    9.2 Aug. 27 1998 16:19 GMT

Line Statistic Types

 3) Out of Frames                       40) Unavail. Seconds
 4) Loss of Signal                      41) BIP-8 Errors
 6) CRC Errors                          42) BIP-8 Errored Seconds
29) Line Code Violation                 43) BIP-8 Severely Err Secs.
30) Line Errored Seconds                44) Cell Framing Sev. Err Frame Secs
31) Line Severely Err Secs              45) Cell Framing Unavail. Secs.
32) Line Parity Errors                  98) PLCP OOF counts
33) Errored Seconds - Parity            144) Cell Framing FEBE Sev. Err. Secs.
34) Severely Err Secs - Parity          152) PLCP YEL Counts
38) Severely Err Frame Secs



This Command: cnfphyslnstats 10.1
```

Figure 1-31 cnfphyslnstats—Configure Physical Line Statistics (T1)

```
sb-reef        TN    SuperUser       IGX 8420    9.2 Aug. 27 1998 18:17 PDT

Line Statistic Types

  1) Bipolar Violations                197) Section BIP8
  3) Out of Frames                     198) Line BIP24
  4) Losses of Signal                  199) Line FEBE
  5) Frames Bit Errors                 200) Path BIP8
  6) CRC Errors                        201) Path FEBE
 62) Total Cells Tx to line            202) Section BIP8 Err. Secs.
 69) Total Cells Rx from line          203) Line BIP24 Err. Secs.
151) Yellow Alarm Transition Count     204) Line FEBE Err. Secs.
153) AIS Transition Count              205) Path BIP8 Err. Secs.
193) Loss of Cell Delineation          206) Path FEBE Err. Secs.
194) Loss of Pointer                   207) Section BIP8 Severely Err. Secs.
195) OC-3 Path AIS                      208) Section Sev. Err. Framing Secs.
196) OC-3 Path YEL                      209) Line BIP24 Severely Err. Secs.

Last Command: cnfphyslnstats 10.1


Continue? y


sb-reef        TN    SuperUser       IGX 8420    9.2 Aug. 27 1998 18:17 PDT

Line Statistic Types

210) Line FEBE Severely Err. Secs.
211) Path BIP8 Severely Err. Secs.
212) Path FEBE Severely Err. Secs.
213) Line Unavailable Secs.
214) Line Farend Unavailable Secs.
215) Path Unavailable Secs.
216) Path Farend Unavailable Secs.
217) HCS Uncorrectable Error
218) HCS Correctable Error




This Command: cnfphyslnstats 10.1


Statistic Type:
```

Figure 1-32 cnfphyslnstats—Configure Physical Line Statistics (E1)

```
sw228          TN    SuperUser       IGX 8420    9.2 Aug. 27 1998 18:07 PST

Line Statistic Types

  3) Out of Frames                       198) Line BIP24
  4) Losses of Signal                    199) Line FEBE
  5) Frames Bit Errors                   200) Path BIP8
  6) CRC Errors                          201) Path FEBE
 62) Total Cells Tx to line              202) Section BIP8 Err. Secs.
 69) Total Cells Rx from line            203) Line BIP24 Err. Secs.
151) Yellow Alarm Transition Count       204) Line FEBE Err. Secs.
153) AIS Transition Count                205) Path BIP8 Err. Secs.
193) Loss of Cell Delineation            206) Path FEBE Err. Secs.
194) Loss of Pointer                     207) Section BIP8 Severely Err. Secs.
195) OC-3 Path AIS                        208) Section Sev. Err. Framing Secs.
196) OC-3 Path YEL                        209) Line BIP24 Severely Err. Secs.
197) Section BIP8                        210) Line FEBE Severely Err. Secs.
This Command: cnfphyslnstats 11.4


Continue? y



sw228          TN    SuperUser       IGX 8420    9.2 Aug. 27 1998 18:07 PST

Line Statistic Types

211) Path BIP8 Severely Err. Secs.
212) Path FEBE Severely Err. Secs.
213) Line Unavailable Secs.
214) Line Farend Unavailable Secs.
215) Path Unavailable Secs.
216) Path Farend Unavailable Secs.
217) HCS Uncorrectable Error
218) HCS Correctable Error






This Command: cnfphyslnstats 11.4
```

cnfportstats (Configure Port Statistics Collection)

The **cnfportstats** command configures parameters for statistics collection on ports.

In previous releases of the BPX and IGX switch software, only statistics from QBIN 1-9 were collected on AutoRoute trunks. Starting from switch software release 9.3.10, the switch allows the collection of additional QBIN statistics. Following is a summary of all QBIN statistics collected by the BPX and IGX. Qbin statistics are Cells Served, Cells Discarded, and Cells Received.

- UXM and BXM qbins 1-9 on AutoRoute trunks.
- BXM qbins 0-3, 9 on AutoRoute ports.
- UXM qbins 2,3, 7-9 on AutoRoute ports.
- UXM and BXM qbins 10-15 on VSI ports and trunks.

All other Qbins are unused, and the switch does not provide statistics for them. Also starting in switch software release 9.3.10, the switch provides the collection of Qbin Cells Discarded statistics via SNMP for the above mentioned Qbins.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

cnftrkstats, dsportstathist, dsporterrs, dsptrkstathist, cnfstatparm, dspphyslnstats, dspphyslnstathist

Note Information about **dspqbinstats** and **dspcntrstats** is found in the *Update to the Cisco WAN Switch Command Reference, Release 9.3.10.*

Syntax

cnfportstats <port> <stat> <interval> <e|d> [<samples> <size> <peaks>]

<port>	Specifies the port to configure.
<stat>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<e|d>	Enables/disables a statistic. E to enable; D to disable.
[samples]	Specifies the number of samples to collect (1–255).

[size]	Specifies the number of bytes per data sample (1, 2 or 4).
[peaks]	Enables the collection of one minute peaks. Y to enable; N to disable.

Function

The **cnfportstats** command configures port statistics. The primary purpose of this command is debugging. Table 1-33 lists the configurable statistics for a Frame Relay port. For port statistics in general, refer to the actual **cnfportstats** screens on a node. Not all statistic types are applied to all ports.

Table 1-33 Configurable Statistics for a Frame Relay Port

Type	Statistic
1–4	Total frames and bytes transmitted and received.
5–6	Frames transmitted with FECN and BECN set.
7–10	Frames received with problems: CRC errors, invalid format, frame alignment errors, wrong length frames.
11	Number of direct memory access (DMA) overruns on a Frame Relay port that are probably due to excessive user-data input.
12–17	LMI counts on UNI ports. These include status inquiries, status transmit and update requests, invalid inquiries, and LMI link time-outs.
18	Frames received with DLCIs in error.
19	Frames dropped with DE bit set.
20–24	LMI counts on NNI ports: status inquiries, status receive and update requests, LMI link time-outs, keep-alive sequence errors.
25–26	Frame and byte count totals for Consolidated Link Layer Message (CLLM) frames that transmit Optimized Bandwidth Management messages.

Figure 1-33 cnfportstats—Configure Port Statistics on UXM (IGX) Node

```
sw144          TN    Cisco           IGX 8420  9.3.10 Date/Time Not Set

Port Statistic Types

34) PORT: Unknwn VPI/VCI cnt           48) PORT: # of cells rcvd
35) VI: Cells rcvd w/CLP=1             49) PORT: # of cells xmt
36) VI: OAM cells received             51) INVMUX: HEC cell errors
37) VI: Cells tx w/CLP=1               52) INVMUX: LCP cell errors
39) VI: Cells received w/CLP=0         53) INVMUX: Cell Hunt Count
40) VI: Cells discarded w/CLP=0        54) INVMUX: Bandwidth Change Count
41) VI: Cells discarded w/CLP=1        55) ILMI: Get Req PDUs rcvd
42) VI: Cells transmitted w/CLP=0      56) ILMI: GetNxt Req PDUS rx
43) VI: OAM cells transmitted          57) ILMI: GetNxt Req PDUS xmt
44) VI: RM cells received              58) ILMI: Set Req PDUs rcvd
45) VI: RM cells transmitted           59) ILMI: Trap PDUs rcvd
46) VI: Cells transmitted              60) ILMI: Get Rsp PDUs rcvd
47) VI: Cells received                 61) ILMI: Get Req PDUs xmt

This Command: cnfportstats 4.1


Continue?

sw144          TN    Cisco           IGX 8420  9.3.10 Date/Time Not Set

Port Statistic Types

62) ILMI: Get Rsp PDUs xmt             75) LMI: Invalid LMI PDU length rcvd
63) ILMI: Set Req PDUs xmt             76) LMI: Unknown LMI PDUs rcvd
64) ILMI: Trap PDUs xmt                77) LMI: Invalid LMI IE rcvd
65) ILMI: Unknwn PDUs rcvd             78) LMI: Invalid Transaction IDs
66) LMI: Status messages xmt           79) INVMUX: Unavailable Seconds
67) LMI: Updt Status msgs xmt          80) INVMUX: Near End Fail Count
68) LMI: Status Ack msgs xmt           81) INVMUX: Last Proto Fail Code
69) LMI: Status Enq msgs rcvd          82) INVMUX: Slowest Link
70) LMI: Status Enq msgs xmt           86) Q2 Cells Tx
71) LMI: Status msgs rcvd              87) Tx Q2 CDscd
72) LMI: Updt Status msg rcvd          88) Egr CRx Q2
73) LMI: Status Ack msg rcvd           89) Q3 Cells Tx
74) LMI: Invalid LMI PDUs rcvd         90) Tx Q3 CDscd

This Command: cnfportstats 4.1


Continue?

sw144          TN    Cisco           IGX 8420  9.3.10 Date/Time Not Set

Port Statistic Types

91) Egr CRx Q3                         113) Q11 Cells Tx
101) Q7 Cells Tx                       114) Tx Q11 CDscd
102) Tx Q7 CDscd                       115) Egr CRx Q11
103) Egr CRx Q7                        116) Q12 Cells Tx
104) Q8 Cells Tx                       117) Tx Q12 CDscd
105) Tx Q8 CDscd                       118) Egr CRx Q12
106) Egr CRx Q8                        119) Q13 Cells Tx
107) Q9 Cells Tx                       120) Tx Q13 CDscd
108) Tx Q9 CDscd                       121) Egr CRx Q13
109) Egr CRx Q9                        122) Q14 Cells Tx
110) Q10 Cells Tx                      123) Tx Q14 CDscd
111) Tx Q10 CDscd                      124) Egr CRx Q14
```

```
112) Egr CRx Q10                       125) Q15 Cells Tx

This Command: cnfportstats 4.1


Continue?

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Port Statistic Types

126) Tx Q15 CDscd
127) Egr CRx Q15


This Command: cnfportstats 4.1


Statistic Type:
```

Figure 1-34 cnfportstats—Configure Port Statistics on BXM (BPX) Node

```
NODENAME       TRM   Cisco           BPX 8620  9.3.10 Date/Time Not Set

Port Statistic Types

 1) Unknown VPI/VCI count               24) Get Request PDUs transmitted
 8) Number of cells received            25) Get Response PDUs transmitted
 9) Number of cells rcvd w/CLP set      26) Trap PDUs transmitted
12) Number of cells xmitted             27) Unknown ILMI PDUs Received
13) OAM cells received count            28) Status messages transmitted
15) Number of cells xmitted w/CLP set   29) Update Status messages transmitted
18) Get Request PDUs received           30) Status Acknowledge msgs transmitted
19) Get Next Request PDUS received      31) Status Enquiry messages received
20) Get Next Request PDUS transmitted   32) Status Enquiry mesgs transmitted
21) Set Request PDUs received           33) Status messages received
22) Trap PDUs received                  34) Update Status messages received
23) Get Response PDUs received          35) Status Acknowledge messages received


This Command: cnfportstats 3.6


Continue?

NODENAME       TRM   Cisco           BPX 8620  9.3.10 Date/Time Not Set

Port Statistic Types

36) Invalid LMI PDUs received received  48) Last unknown VPI/VCI pair
37) Invalid LMI PDU length received     49) Tx Cells Served on Qbin 0
38) Unknown LMI PDUs received           50) Tx Cells Discarded on Qbin 0
39) Invalid LMI IE received             51) Tx Cells Received on Qbin 0
40) Invalid Transaction IDs             52) Tx Cells Served on Qbin 1
41) Number of cells rcvd w/clp 0        53) Tx Cells Discarded on Qbin 1
42) Number of cells dscd w/clp 0        54) Tx Cells Received on Qbin 1
43) Number of cells dscd w/clp set      55) Tx Cells Served on Qbin 2
44) Number of cells tx w/clp 0          56) Tx Cells Discarded on Qbin 2
45) Tx OAM cell count                   57) Tx Cells Received on Qbin 2
46) Rx RM cell count                    58) Tx Cells Served on Qbin 3
47) Tx RM cell count                    59) Tx Cells Discarded on Qbin 3


This Command: cnfportstats 3.6

Continue?
```

```
NODENAME       TRM   Cisco           BPX 8620  9.3.10 Date/Time Not Set

Port Statistic Types

60) Tx Cells Received on Qbin 3         87) Tx Cells Received on Qbin 12
76) Tx Cells Served on Qbin 9           88) Tx Cells Served on Qbin 13
77) Tx Cells Discarded on Qbin 9        89) Tx Cells Discarded on Qbin 13
78) Tx Cells Received on Qbin 9         90) Tx Cells Received on Qbin 13
79) Tx Cells Served on Qbin 10          91) Tx Cells Served on Qbin 14
80) Tx Cells Discarded on Qbin 10       92) Tx Cells Discarded on Qbin 14
81) Tx Cells Received on Qbin 10        93) Tx Cells Received on Qbin 14
82) Tx Cells Served on Qbin 11          94) Tx Cells Served on Qbin 15
83) Tx Cells Discarded on Qbin 11       95) Tx Cells Discarded on Qbin 15
84) Tx Cells Received on Qbin 11        96) Tx Cells Received on Qbin 15
85) Tx Cells Served on Qbin 12
86) Tx Cells Discarded on Qbin 12


This Command: cnfportstats 3.6


Statistic Type:
```

cnfrobparm (Configure Robust Alarms Parameters)

The **cnfrobparm** command sets parameters associated with the Robust Alarms feature.

In Release 9.2 and higher, there are robust alarms for certain alarm conditions that appear in the maintenance log or in the node user interface but are not also reported as SNMP traps to the customer NMS. (Such traps are generated by the Cisco WAN Manager RTM proxy upon receiving Robust Alarms from a switch.) Robust Alarm messages are generated by the following alarm conditions:

- Power supply, temperature, fan, and DC voltage level alarms
- Connection AIS alarm
- Bus failure
- External clock source failure
- Multiple invalid login attempts on a user port
- Excessive CPU and memory usage on switch processor card

The BPX and the IGX generate power supply, temperature, and fan alarms.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	Yes

Associated Commands

none

Syntax

cnfrobparm <index> <value>

<index>	Specifies the parameter to configure.
<value>	Specifies new value to be entered for the parameter.

Function

This command sets Robust Alarms parameters. Robust Alarms is a protocol for node-to-Network Management System (NMS) communications. When a node has statistics or alarm information for the NMS, it requires a confirmation from the NMS that the database has been updated. Table 1-34 lists the parameters. Figure 1-35 illustrates the command.

Table 1-34 cnfrobparm Parameters and Descriptions

No.	Parameter	Description	Default
1	Robust State wakeup timer	The Robust State machine becomes active after the specified time period has elapsed. If this timer value increases, the state machine operates less often and places less load on the controller card. Units of measure are seconds.	10 seconds
2	Robust update timer	Once a message has gone to the NMS, another message does not go until this timer expires. Units of measure are seconds.	10 seconds
3	Robust acknowledgment time-out	An acknowledgment must be returned by the NMS within this time period or it is assumed the communications link is down. Units of measure are seconds.	600 seconds
4	Robust acknowledgment reset timeout	After a downed link has been repaired, the next message goes out after this time period has elapsed. The purpose of this time period is to let the link settle after the repair. Units of measure are seconds.	60 seconds

Figure 1-35 cnfrobparm—Configure Robust Alarm Parameters

```
a34         TRM   SuperUser       IGX 8420    9.2     Aug. 14 1998 15:02 PDT

                           Robust Parameters

1  Robust State wakeup timer (sec) ..................................10
2  Robust update timer (sec) ........................................10
3  Robust acknowledge timeout (sec) ................................600
4  Robust acknowledge reset timeout (sec) ...........................60







This Command: cnfrobparm


Which parameter do you wish to change:
```

cnfrtrparm (Configure Router Parameters)

The **cnfrtrparm** command sets parameters for the embedded router in the Universal Router Module (URM) introduced on the IGX 8400 in Release 9.3.20. The URM provides IOS-based voice support and basic routing functions. It consists of an embedded UXM with one internal ATM port and an embedded IOS-based router.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX	Yes

Associated Commands

cnfrtr, dsprtr, dsprtrslot, dsprtrslots, dspalms, rstrtr

Syntax

cnfrtrparm <router-slot> <index> <action>

The index values and corresponding parameters are:

1. rommon action
2. reset router on IOS IPC failure
3. bootflash write enable

<router-slot>	Specifies the virtual shelf slot to support the URM embedded router. Value is 1-32. Switch software manages the embedded router in the URM as if the router resides on a slot in a virtual shelf (of routers). Each slot in the IGX shelf has a corresponding router slot in the virtual shelf. A router slot is considered empty when the equivalent IGX slot is empty or contains an IGX card without an embedded router. If the IGX slot contains a URM card, the router slot is reported as hosting an IOS router.
rommon action	Specifies what action ROMMON is to take when the URM embedded router boots up. Values are 1, 2, 3, or 4. The default value is 1, load IOS. 1. IOS: if this parameter is set to IOS, the router loads the IOS image from the Flash. 2. BootHelper: if this parameter is set to BootHelper, the router loads BootHelper from the Flash protected area. 3. Rommon-CLI: if this parameter is set to Rommon-CLI, the router enters ROM monitor or maintenance mode. When the router is in this state, you can enter ROM monitor commands from the console port to manually load a system image. 4. Cnfg-register: if this parameter is set to cnfg-register, the router performs the action that was configured in the router’s Configuration Register Boot Field.

reset router on IOS IPC failure	Specifies whether the router IOS is reset in the event of an IOS IPC failure. Values are Y to enable or N to disable. The default value is Y, enable.
bootflash write enable	Enables write to router BootFlash. Values are Y to enable or N to disable. The default value is N, disable.

Figure 1-36 shows how to configure the Rommon Action parameter using the **cnfrtrparm** command.

Figure 1-36 cnfrtrparm—Configure Rommon Action Parameter

```
sw180          TN    Cisco           IGX 8420  9.3.2J    Nov. 7 2000  07:18 GMT

1   Rommon Action                  [  load IOS        ]
2   Reset Router on IOS IPC Failure [  No              ]
3   BootFlash Write Enable         [  Yes             ]










This Command: cnfrtrparm 15 1


load (1)IOS, (2)BootHelper, (3)Rommon-CLI (4)Cnfg-register:
```

Figure 1-37 shows how to configure the Reset Router on IOS IPC Failure parameter using the **cnfrtrparm** command.

Figure 1-37 cnfrtrparm—Configure Reset Router Parameter

```
sw180          TN    Cisco           IGX 8420  9.3.2J    Nov. 7 2000  07:19 GMT

1   Rommon Action                   [  load IOS         ]
2   Reset Router on IOS IPC Failure [  No               ]
3   BootFlash Write Enable          [  Yes              ]










This Command: cnfrtrparm 15 2


Reset IOS on IPC failure ?
```

Figure 1-38 shows how to configure the BootFlash Write Enable parameter using the **cnfrtrparm** command.

Figure 1-38 cnfrtrparm—Configure Reset Router Parameter

```
sw180          TN    Cisco           IGX 8420  9.3.2J    Nov. 7 2000  07:20 GMT

1   Rommon Action                   [  load IOS         ]
2   Reset Router on IOS IPC Failure [  No               ]
3   BootFlash Write Enable          [  Yes              ]










This Command: cnfrtrparm 15 3


Enable write to router BootFlash?
```

cnfslotstats (Configure Slot Statistics Collection)

The **cnfslotstats** command configures the statistics for a card slot.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	BPX	Yes

Associated Commands

dspsloterrs

Syntax

cnfslotstats <port> <stat> <interval> <e|d> [<samples> <size> <peaks>]

<port>	Specifies the port to configure.
<stat>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<e|d>	Enables/disables a statistic. E to enable; D to disable.
[samples]	Specifies the number of samples to collect (1–255).
[size]	Specifies the number of bytes per data sample (1, 2 or 4).
[peaks]	Enables the collection of one minute peaks. Y to enable; N to disable.

Function

This command sets the collection interval for each of the BPX node slot statistics. The default is for no statistics to be collected. The collection interval range is 1 minute–255 minutes (4 1/4 hours).

Table 1-35 lists the statistics associated with each slot in the BPX node. Figure 1-39 illustrates the command screen. This command is primarily a troubleshooting tool for use when hardware errors are experienced that may not be detected by the individual care self-test routines. An associated display command (**dspsloterrs**) is available for all users.

Table 1-35 Statistics Associated with Each Slot in a BPX Node

Error	Description
Standby Bus Errors	Indicates a background test over the standby bus produced an error.
Rx 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.

Table 1-35 Statistics Associated with Each Slot in a BPX Node (continued)

Error	Description
Tx BIP-16 Errors	Data frame transmitted had a checksum error.
Rx BIP-16 Errors	Data frame received with a checksum error.
Bframe parity errors	Errors detected in the BPX frame on the StrataBus or in a memory operation.
SIU Phase Errors	Serial Interface Unit on the card did not detect the frame synch properly.
Rx FIFO Sync Errors	First-In-First-Out buffer synchronization errors.
Poll Clk Errors	Polling clock errors.
CK 192 Errors	Clock 192 errors.
Monarch Specific Errors	Errors that occur on only the BXM.

You must enter the statistic type (1–9) to set the collection interval. When you enter the command, the system responds with the following prompt:

```
Collection Interval (1–255 minutes): __
```

Figure 1-39 cnfslotstats—Configure Slot Statistics Parameters

```
sw81           TN    SuperUser       BPX 15    9.2    Aug. 1 1998 15:42 PST

Card Statistics Types

 1) Standby PRBS Errors
 2) Rx Invalid Port Errs
 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
11) Poll Clk Errors
12) CK 192 Errors
13) Monarch Specific Errors

This Command: cnfslotstats 8
```

cnfstatparms

Configures port statistics parameters for the BPX.

Collects TFTP statistics on all trunks and ports on the BPX and IGX. Includes the additional 18 IGX trunk statistics and 45 BPX/IGX port statistics.

Full Name

Configure Statistics Parameters

Syntax

cnfstatparms <port> <stat> <owner> <interval>

Related Commands

dspstatparms, dsptrkerrshist

Attributes

Privilege	Jobs	Log	Node	Lock
1	No	No	BPX	No

Example 1

cnfstatparms 5 5 5 15 1 2

Figure 1-40 cnfstatparms—Configure Statistics Parameters on the UXM (IGX)

```
sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Available Statistic Object Types:

1: Connections
2: Service Interfaces
3: Trunks
4: Ports
5: Physical Lines
.: Quit









This Command: cnfstatparms 5 5 5 15 1 2


Enter Object Type (numeric value): 3

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Available Object Sub-types:

1: Narrow Band
2: IPX ATM
3: BPX 8600 ATM
4: IGX 8400 ATM
.: Quit









This Command: cnfstatparms 5 5 5 15 1 2


Enter Object Sub Type (numeric value): 4
Enter Peak Value (secs): 300

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Virtual Interface Statistic Types

 1) QBIN: Voice Cells Tx to line       14) QBIN: Tx BData A Cells Discarded
 2) QBIN: TimeStamped Cells Tx to ln   15) QBIN: Tx BData B Cells Discarded
 3) QBIN: NTS Cells Tx to line         16) QBIN: Tx CBR Cells Discarded
 4) QBIN: Hi-Pri Cells Tx to line      17) QBIN: Tx ABR Cells Discarded
 5) QBIN: BData A Cells Tx to line     18) QBIN: Tx nrt-VBR Cells Discarded
 6) QBIN: BData B Cells Tx to line     19) QBIN: Tx NTS Cells Received
 7) QBIN: Tx CBR Cells Served          20) QBIN: Tx Hi-Pri Cells Received
 8) QBIN: Tx nrt-VBR Cells Served      21) QBIN: Tx Voice Cells Received
 9) QBIN: Tx ABR Cells Served          22) QBIN: Tx TS Cells Received
10) QBIN: Tx NTS Cells Discarded       23) QBIN: Tx BData A Cells Received
11) QBIN: Tx Hi-Pri Cells Discarded    24) QBIN: Tx BData B Cells Received
12) QBIN: Tx Voice Cells Discarded     25) QBIN: Tx CBR Cells Received
```

```
13) QBIN: Tx TS Cells Discarded         26) QBIN: Tx ABR Cells Received

This Command: cnfstatparms 5 5 5 15 1 2


Continue?

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Virtual Interface Statistic Types

27) QBIN: Tx nrt-VBR Cells Received     40) CGW: Packets Rx From Network
28) VI: Cells rcvd w/CLP=1              41) CGW: Cells Tx to Line
29) VI: OAM cells received              42) CGW: NIW Frms Relayed to Line
30) VI: Cells tx w/CLP=1                43) CGW: SIW Frms Relayed to Line
31) VI: Cells received w/CLP=0          44) CGW: Aborted Frames Tx to Line
32) VI: Cells discarded w/CLP=0         45) CGW: Dscd Pkts
33) VI: Cells discarded w/CLP=1         46) CGW: 0-Length Frms Rx from Network
34) VI: Cells transmitted w/CLP=0       47) CGW: Bd CRC16 Frms Rx from Network
35) VI: OAM cells transmitted           48) CGW: Bd Lngth Frms Rx from Network
36) VI: RM cells received               49) CGW: OAM RTD Cells Tx
37) VI: RM cells transmitted            50) CF: Egress Packet Sequence Errs
38) VI: Cells transmitted               51) CF: Egress Bad HEC from cellbus
39) VI: Cells received                  52) CF: Egress Packets from cellbus

This Command: cnfstatparms 5 5 5 15 1 2


Continue?

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Virtual Interface Statistic Types

53) CF: Egress Cells Tx to Line         66) CF: Ingress Cells from Line
54) CGW: Packets Tx to Network          67) IE: Egress Packets to Extract Buf
55) CGW: Cells Rx from Line             68) IE: Egress Cells injected
56) CGW: NIW Frms Relayed from Line     69) IE: Egress Packets Extract Buf full
57) CGW: SIW Frms Relayed from Line     70) IE: Ingress Cells to Extract Buf
58) CGW: Abrt Frms                      71) IE: Ingress Packets injected
59) CGW: Dscd Cells                     72) IE: Ingress Cells Extract Buf full
60) CGW: 0-Lngth Frms Rx from Line      73) QBIN: Tx Q10 Cells Served
61) CGW: Bd CRC32 Frms Rx from Line     74) QBIN: Tx Q10 Cells Discarded
62) CGW: Bd Lngth Frms Rx from Line     75) QBIN: Tx Q10 Cells Received
63) CGW: OAM RTD Cells Rx               76) QBIN: Tx Q11 Cells Served
64) CGW: OAM Invalid OAM Cells Rx       77) QBIN: Tx Q11 Cells Discarded
65) CF: Ingress Packets to cellbus      78) QBIN: Tx Q11 Cells Received

This Command: cnfstatparms 5 5 5 15 1 2


Continue?

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Virtual Interface Statistic Types

79) QBIN: Tx Q12 Cells Served
80) QBIN: Tx Q12 Cells Discarded
81) QBIN: Tx Q12 Cells Received
82) QBIN: Tx Q13 Cells Served
83) QBIN: Tx Q13 Cells Discarded
84) QBIN: Tx Q13 Cells Received
85) QBIN: Tx Q14 Cells Served
```

```
86) QBIN: Tx Q14 Cells Discarded
87) QBIN: Tx Q14 Cells Received
88) QBIN: Tx Q15 Cells Served
89) QBIN: Tx Q15 Cells Discarded
90) QBIN: Tx Q15 Cells Received


This Command: cnfstatparms 5 5 5 15 1 2


Enter Statistic Type ('.' to quit):

=============================================================================
*** cnfstatparms for IGX UXM Port Statistics
=============================================================================



sw144          TN    Cisco          IGX 8420  9.3.1x    Date/Time Not Set

Available Statistic Object Types:

1: Connections
2: Service Interfaces
3: Trunks
4: Ports
5: Physical Lines
.: Quit








This Command: cnfstatparms 5 5 5 15 1 2


Enter Object Type (numeric value): 4

sw144          TN    Cisco          IGX 8420  9.3.1x    Date/Time Not Set

Available Object Sub-types:

1: Frame Relay Ports
2: ATM Ports
3: FTM
.: Quit









This Command: cnfstatparms 5 5 5 15 1 2


Enter Object Sub Type (numeric value): 2
Enter Peak Value (secs): 300
```

```
sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Port Statistic Types

 1) Frames Received                     14) LMI UNI Status Update Count
 2) Frames Transmitted                  15) LMI Invalid Status Enquiries
 3) Bytes Received                      16) LMI UNI Link Timeout Errors
 4) Bytes Transmitted                   17) LMI UNI Keepalive Sequence Errors
 5) Frames Transmitted with FECN        18) Receive Frames Undefined DLCI Count
 6) Frames Transmitted with BECN        19) DE Frames Dropped
 7) Receive Frame CRC Errors            20) LMI NNI Status Enquiries
 8) Invalid Format Receive Frames       21) LMI NNI Status Receive Count
 9) Receive Frame Alignment Errors      22) LMI NNI Status Update Count
10) Illegal Length Receive Frames       23) LMI NNI Keepalive Sequence Errors
11) Number of DMA Overruns              24) LMI NNI Link Timeout Errors
12) LMI UNI Status Enquiries            25) CLLM Frames Transmitted
13) LMI UNI Status Transmit Count       26) CLLM Bytes Transmitted

This Command: cnfstatparms 5 5 5 15 1 2


Continue?

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Port Statistic Types

27) CLLM Frames Received                40) VI: Cells discarded w/CLP=0
28) CLLM Bytes Received                 41) VI: Cells discarded w/CLP=1
29) CLLM Failures                       42) VI: Cells transmitted w/CLP=0
30) Tx Frames Discarded - Queue Overflow43) VI: OAM cells transmitted
31) Tx Bytes Discarded - Queue Overflow 44) VI: RM cells received
32) Tx Frames while Ingress LMI Failure 45) VI: RM cells transmitted
33) Tx Bytes while Ingress LMI Failure  46) VI: Cells transmitted
34) PORT: Unknwn VPI/VCI cnt            47) VI: Cells received
35) VI: Cells rcvd w/CLP=1              48) PORT: # of cells rcvd
36) VI: OAM cells received              49) PORT: # of cells xmt
37) VI: Cells tx w/CLP=1                50) INVMUX: maximum diff delay
38) PORT: Last unknown VPI/VCI pair     51) INVMUX: HEC cell errors
39) VI: Cells received w/CLP=0          52) INVMUX: LCP cell errors

This Command: cnfstatparms 5 5 5 15 1 2


Continue?

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Port Statistic Types

53) INVMUX: Cell Hunt Count             66) LMI: Status messages xmt
54) INVMUX: Bandwidth Change Count      67) LMI: Updt Status msgs xmt
55) ILMI: Get Req PDUs rcvd             68) LMI: Status Ack msgs xmt
56) ILMI: GetNxt Req PDUS rx            69) LMI: Status Enq msgs rcvd
57) ILMI: GetNxt Req PDUS xmt           70) LMI: Status Enq msgs xmt
58) ILMI: Set Req PDUs rcvd             71) LMI: Status msgs rcvd
59) ILMI: Trap PDUs rcvd                72) LMI: Updt Status msg rcvd
60) ILMI: Get Rsp PDUs rcvd             73) LMI: Status Ack msg rcvd
61) ILMI: Get Req PDUs xmt              74) LMI: Invalid LMI PDUs rcvd
62) ILMI: Get Rsp PDUs xmt              75) LMI: Invalid LMI PDU length rcvd
63) ILMI: Set Req PDUs xmt              76) LMI: Unknown LMI PDUs rcvd
64) ILMI: Trap PDUs xmt                 77) LMI: Invalid LMI IE rcvd
65) ILMI: Unknwn PDUs rcvd              78) LMI: Invalid Transaction IDs
```

```
This Command: cnfstatparms 5 5 5 15 1 2


Continue?

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Port Statistic Types

79) INVMUX: Unavailable Seconds        92)
80) INVMUX: Near End Fail Count        93)
81) INVMUX: Last Proto Fail Code       94)
82) INVMUX: Slowest Link               95)
83)                                    96)
84)                                    97)
85)                                    98)
86) Q2 Cells Tx                        99)
87) Tx Q2 CDscd                        100)
88) Egr CRx Q2                         101) Q7 Cells Tx
89) Q3 Cells Tx                        102) Tx Q7 CDscd
90) Tx Q3 CDscd                        103) Egr CRx Q7
91) Egr CRx Q3                         104) Q8 Cells Tx

This Command: cnfstatparms 5 5 5 15 1 2


Continue?

sw144          TN    Cisco           IGX 8420  9.3.1x    Date/Time Not Set

Port Statistic Types

105) Tx Q8 CDscd                       118) Egr CRx Q12
106) Egr CRx Q8                        119) Q13 Cells Tx
107) Q9 Cells Tx                       120) Tx Q13 CDscd
108) Tx Q9 CDscd                       121) Egr CRx Q13
109) Egr CRx Q9                        122) Q14 Cells Tx
110) Q10 Cells Tx                      123) Tx Q14 CDscd
111) Tx Q10 CDscd                      124) Egr CRx Q14
112) Egr CRx Q10                       125) Q15 Cells Tx
113) Q11 Cells Tx                      126) Tx Q15 CDscd
114) Tx Q11 CDscd                      127) Egr CRx Q15
115) Egr CRx Q11
116) Q12 Cells Tx
117) Tx Q12 CDscd

This Command: cnfstatparms 5 5 5 15 1 2


Enter Statistic Type ('.' to quit):
```

Figure 1-41 cnfstatparms—Configure Statistics Parameters on the BXM (BPX)

```
rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:37
GMT

Available Statistic Object Types:

1: Connections
2: Service Interfaces
3: Trunks
4: Ports
5: Physical Lines
.: Quit

This Command: cnfstatparms 5 5 5 15 1 2

Enter Object Type (numeric value):  3

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:37
GMT

Available Object Sub-types:

1: Narrow Band
2: IPX ATM
3: BPX 8600 ATM
4: IGX 8400 ATM
.: Quit

This Command: cnfstatparms 5 5 5 15 1 2

Enter Object Sub Type (numeric value):  3

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:38
GMT

Virtual Interface Statistic Types

 1) Tx Voice Overflow Drpd Cells       14) Tx Bdata B CLP Drpd Cells
 2) Tx TS Overflow Drpd Cells          15) Tx Voice CLP Drpd Cells
 3) Tx NTS Overflow Drpd Cells         16) Tx TS CLP Drpd Cells
 4) Tx Hi-Pri Overflow Drpd Cells      17) Tx NTS CLP Drpd Cells
 5) Tx BData A Overflow Drpd Cells     18) Tx Hi-Pri CLP Drpd Cells
 6) Tx BData B Overflow Drpd Cells     19) Tx CBR Cells Served
 7) Tx Voice Cells Served              20) Tx VBR Cells Served
 8) Tx TS Cells Served                 21) Tx ABR Cells Served
 9) Tx NTS Cells Served                22) Tx CBR CLP Drpd Cells
10) Tx Hi-Pri Cells Served             23) Tx nrt-VBR CLP Drpd Cells
11) Tx BData A Cells Served            24) Tx ABR CLP Drpd Cells
12) Tx BData B Cells Served            25) Tx CBR Overflow Drpd Cells
13) Tx Bdata A CLP Drpd Cells          26) Tx nrt-VBR Overflow Drpd Cells

This Command: cnfstatparms 5 5 5 15 1 2

Continue? y

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:38
GMT

Virtual Interface Statistic Types

27) Tx ABR Overflow Drpd Cells         40) Egress TS Cells Rx
28) Tx NTS Cells Discarded             41) Egress BData A Cells Rx
29) Tx Hi-Pri Cells Discarded          42) Egress BData B Cells Rx
30) Tx Voice Cells Discarded           43) Egress CBR Cells Rx
```

```
31) Tx TS Cells Discarded               44) Egress ABR Cells Rx
32) Tx BData A Cells Discarded          45) Egress VBR Cells Rx
33) Tx BData B Cells Discarded          46) Total Cells Tx from port
34) Tx CBR Cells Discarded              47) Cells RX with CLP0
35) Tx ABR Cells Discarded              48) Cells Rx with CLP1
36) Tx VBR Cells Discarded              49) Cells RX Discard with CLP0
37) Egress NTS Cells Rx                 50) Cells RX Discard with CLP1
38) Egress Hi-Pri Cells Rx              51) Cells TX with CLP0
39) Egress Voice Cells Rx               52) Cells TX with CLP1

This Command: cnfstatparms 5 5 5 15 1 2

Continue? y

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:38
GMT

Virtual Interface Statistic Types

53) BXM: Total Cells RX                 66) Egress Q12 Cells Rx
54) Ingress OAM Cell Count              67) Tx Q13 Cells Served
55) Egress OAM Cell Count               68) Tx Q13 Cells Discarded
56) Ingress RM cell count               69) Egress Q13 Cells Rx
57) Egress RM cell count                70) Tx Q14 Cells Served
58) Tx Q10 Cells Served                 71) Tx Q14 Cells Discarded
59) Tx Q10 Cells Discarded              72) Egress Q14 Cells Rx
60) Egress Q10 Cells Rx                 73) Tx Q15 Cells Served
61) Tx Q11 Cells Served                 74) Tx Q15 Cells Discarded
62) Tx Q11 Cells Discarded              75) Egress Q15 Cells Rx
63) Egress Q11 Cells Rx
64) Tx Q12 Cells Served
65) Tx Q12 Cells Discarded

This Command: cnfstatparms 5 5 5 15 1 2 3 3 60

Enter Statistic Type ('.' to quit):

===============================================================================
*** cnfstatparms for BPX BXM Port Statistics

================================================================================

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:41
GMT

Available Statistic Object Types:

1: Connections
2: Service Interfaces
3: Trunks
4: Ports
5: Physical Lines
.: Quit

This Command: cnfstatparms 5 5 5 15 1 2

Enter Object Type (numeric value): 4

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:41
GMT

Available Object Sub-types:

1: Frame Relay Ports
```

```
2: ASI
3: FTC
.: Quit

This Command: cnfstatparms 5 5 5 15 1 2

Enter Object Sub Type (numeric value): 2

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:42
GMT

Port Statistic Types

 1) Unknown VPI/VCI count               13) OAM cells received count
 2) Cell buff overflow (ingress)        14) Tx payload err cnt BIP-16 err
 3) Non-zero GFC count                  15) Number of cells xmitted w/CLP
set
 4) ISU discard count                   16) Number of cells xmitted w/EFCI
set
 5) ISU free list empty count           17) Tx header err discard
 6) Receive AIS cell count              18) Get Request PDUs received
 7) Receive FERF cell count             19) Get Next Request PDUS received
 8) Number of cells received            20) Get Next Request PDUS
transmitted
 9) Number of cells rcvd w/CLP set      21) Set Request PDUs received
10) Number of cells rcvd w/EFCI set     22) Trap PDUs received
11) Number of BCM cells rcvd            23) Get Response PDUs received
12) Number of cells xmitted             24) Get Request PDUs transmitted

This Command: cnfstatparms 5 5 5 15 1 2

Continue?

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:42
GMT

Port Statistic Types

25) Get Response PDUs transmitted       37) Invalid LMI PDU length received
26) Trap PDUs transmitted               38) Unknown LMI PDUs received
27) Unknown ILMI PDUs Received          39) Invalid LMI IE received
28) Status messages transmitted         40) Invalid Transaction IDs
29) Update Status messages transmitted  41) Number of cells rcvd w/clp 0
30) Status Acknowledge msgs transmitted 42) Number of cells dscd w/clp 0
31) Status Enquiry messages received    43) Number of cells dscd w/clp set
32) Status Enquiry mesgs transmitted    44) Number of cells tx w/clp 0
33) Status messages received            45) Tx OAM cell count
34) Update Status messages received     46) Rx RM cell count
35) Status Acknowledge messages received47) Tx RM cell count
36) Invalid LMI PDUs received received  48) Last unknown VPI/VCI pair

This Command: cnfstatparms 5 5 5 15 1 2

Continue?

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:42
GMT

Port Statistic Types

49) Tx Cells Served on Qbin 0           61)
50) Tx Cells Discarded on Qbin 0        62)
51) Tx Cells Received on Qbin 0         63)
52) Tx Cells Served on Qbin 1           64)
```

```
53) Tx Cells Discarded on Qbin 1        65)
54) Tx Cells Received on Qbin 1         66)
55) Tx Cells Served on Qbin 2           67)
56) Tx Cells Discarded on Qbin 2        68)
57) Tx Cells Received on Qbin 2         69)
58) Tx Cells Served on Qbin 3           70)
59) Tx Cells Discarded on Qbin 3        71)
60) Tx Cells Received on Qbin 3         72)

This Command: cnfstatparms 5 5 5 15 1 2

Continue?

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:43
GMT

Port Statistic Types

73)                                     85) Tx Cells Served on Qbin 12
74)                                     86) Tx Cells Discarded on Qbin 12
75)                                     87) Tx Cells Received on Qbin 12
76) Tx Cells Served on Qbin 9           88) Tx Cells Served on Qbin 13
77) Tx Cells Discarded on Qbin 9        89) Tx Cells Discarded on Qbin 13
78) Tx Cells Received on Qbin 9         90) Tx Cells Received on Qbin 13
79) Tx Cells Served on Qbin 10          91) Tx Cells Served on Qbin 14
80) Tx Cells Discarded on Qbin 10       92) Tx Cells Discarded on Qbin 14
81) Tx Cells Received on Qbin 10        93) Tx Cells Received on Qbin 14
82) Tx Cells Served on Qbin 11          94) Tx Cells Served on Qbin 15
83) Tx Cells Discarded on Qbin 11       95) Tx Cells Discarded on Qbin 15
84) Tx Cells Received on Qbin 11        96) Tx Cells Received on Qbin 15

This Command: cnfstatparms 5 5 5 15 1 2

Enter Statistic Type ('.' to quit):
```

cnftcpparm (Configure TCP Parameters)

The **cnftcpparm** command configures the TCP parameter.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

dsptcpparm

Syntax

cnftcpparm <network ip throttle>

<network ip throttle>	Specifies the number of times that the BCC card polls the LAN for attention requests.

Function

This command specifies the number of times per second that the BCC checks the IP addresses for attention requests. Figure 1-42 illustrates the system response when you enter **cnftcpparm**.

Figure 1-42 Configure TCP Parameters

```
sw81          TN    SuperUser       BPX 15    9.2    Aug. 1 1998  15:46 PST

NWIP Bandwidth Throttle (Kbytes/sec):  32











This Command: cnftcpparm


Enter NWIP Bandwidth Throttle (Kbytes/sec):
```

cnftermfunc (Configure Terminal Port Functions)

Configures port functions for the IGX or BPX control and auxiliary ports. The IGX nodes support two EIA/TIA-232 asynchronous serial ports on the SCC and SCM, respectively. The BPX node supports two EIA/TIA-232 asynchronous serial ports on the BCC. In all cases, the top port is the Control Terminal port, and the lower port is the Aux Port. The Control Terminal port can connect to a control terminal, Cisco WAN Manager, a direct dial-in modem, or any external EIA/TIA-232 device. The Aux Port can connect to a printer, an auto-dial modem to call a control center, or an external EIA/TIA-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 auto-dial modem, designate a network ID and a phone number. Configuring the auxiliary port for an auto-dial modem enables the following to occur: When a change in alarm status happens anywhere in the network, the auto-dial modem attached to the auxiliary port dials the specified phone number. If the call goes to the TAC, the alarm is logged under the specified network ID. With this log, Cisco engineers are automatically notified of any problems that occur in 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

Jobs	Log	Node	Lock
No	Yes	IPX, IGX	Yes

Example 1

cnftermfunc

Description

Configure an IGX or BPX node control or auxiliary port.

System Response

Without an argument on the command line, the switch displays a list of parameters. Figure 1-43 shows the screen on an IGX 8420 switch.

Figure 1-43 cnftermfunc Screen on an IGX 8420 Switch

```
TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  03:46 GMT


Control port                            Auxiliary port

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







This Command: cnftermfunc


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

Example 2

cnftermfunc a 5 Intrepid 18007674479

Description

Configure an auxiliary port. 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 dials 18007674479 to reach the TAC. The alarm is logged on a Cisco computer under the name Intrepid.

Table 1-36 cnftermfunc—Parameters

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

Table 1-37 cnftermfunc—Index Parameters

Index	Description
Control port	1. VT100/Cisco WAN Manager
	2. VT100
	3. External device window
Auxiliary port	1. Okidata 184 printer
	2. Okidata 184 printer with LOG
	3. VT100
	4. Alarm Message Collector
	5. External Device Window
	6. Autodial Modem

Table 1-38 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 1–12 characters used to identify the network during an auto-dial connection to the TAC. This parameter is valid only for “Autodial Modem” interfaces. Any alarm status change in the network is automatically logged at Cisco by using this network ID. Contact 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 auto-dial 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 auto-dial 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 Cisco TAC for the number.

cnftlparm (Configure Trunk-Based Loading Parameters)

The **cnftlparm** command configures the trunk-based loading (TBL) parameters.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnfcmparm

Syntax

cnftlparm <index>

Parameters

Table 1-39 describes the **cnftlparm** parameters.

Note Cisco Systems recommends that you leave all parameters at the default values. If you need to change a TBL parameter, first call TAC.

Table 1-39 Configurable Trunk-Based Loading Parameters

No.	Index	Description	Range	Default
1	Enable	Enables or disables automatic TBL update messages. Do not disable unless you first contact TAC.	Yes/No	Yes
2	Normal Interval	Specifies the time interval between checks to determine if the node should send out a TBL update signaling a non-critical change in the trunk load.	0–65000 (times 100 msecs)	150
3	Fast Interval	Specifies the time interval between checks to determine if the node should send out a TBL update signaling a critical change in the trunk load.	0–65000 (times 100 msecs)	50
4	Low Threshold	Algorithm parameters for complex update algorithm.	1–100%	50
5	High Threshold	Algorithm parameters for complex update algorithm.	1–100%	90
6	Min. Percent Chg, Mid 1	Algorithm parameters for complex update algorithm.	1–100%	10
7	Min. Percent Chg, Mid 2	Algorithm parameters for complex update algorithm.	1–100%	6

Table 1-39 Configurable Trunk-Based Loading Parameters (continued)

No.	Index	Description	Range	Default
8	Min. Percent Chg, Mid 3	Algorithm parameters for complex update algorithm.	1–100%	3
9	Min. Percent Chg, Upper	Algorithm parameters for complex update algorithm.	1–100%	2
10	Background Updt Count	Specifies a periodic update. 0=update disabled. If *Background Updt Count* is greater than 0, switch software multiplies it by the value you specify for *Normal Interval*.	0–1000%	0
11	Update Algorithm	Selects the update algorithm. 0=default. 1=complex update algorithm.	0 or 1	0

Function

The **cnftlparm** command lets you control the rate of update messages in conjunction with trunk-based loading. For descriptions of the trunk-based loading parameters, see Table 1-39.

Figure 1-44 shows the screen for **cnftlparm**.

Figure 1-44 cnftlparm—Parameters

```
sw66           TN    SuperUser       BPX 15    9.2 Aug. 27 1998 22:31 GMT

1  Enable                    [  Yes]
2  Normal Interval           [  150] (100msecs)
3  Fast Interval             [   50] (100msecs)
4  Low Threshold             [   50] (D)
5  High Threshold            [   90] (D)
6  Min Percent Chg, Mid 1    [   10] (D)
7  Min Percent Chg, Mid 2    [    6] (D)
8  Min Percent Chg, Mid 3    [    3] (D)
9  Min Percent Chg, Upper    [    2] (D)
10 Background Updt Count     [    0] (D)
11 Update Algorithm          [    0] (D)




This Command: cnftlparm


Enter parameter index:
```

cnftrafficgen

You can enable the Traffic Generation Test with the **cnftrafficgen** command and requires SuperUser level permissions. The **cnftrafficgen** command interacts with the firmware, indicating that the functionality is to be turned on or off.

The **cnftrafficgen** command takes as input the following values:

- the address of the PVC.
- a flag indicating to enable or disable (E/D).
- the number of frames or cells to transmit.
- type of byte pattern to send, 1 = send all 0xff's, 2 = send all 0xAA's, 3 = send all 0x5A's.
- direction of traffic generation. For Release 9.2, only N option for Network is supported.

The Traffic Generation Test completes when the requested number of frames or cells has been transmitted, or when the test is explicitly disabled for the PVC. It will not remain enabled indefinitely like the OAM Loopback Test.

The Traffic Generation test does not directly log alarms. It is assumed that alarms have been reported before you decide to run this intrusive test. You can view the status of the Traffic Generation test by using the **dsptrafficgen** command on the node.

Traffic Generation Test

For traffic generation, switch software sends a "Transmit Frame/Generate Traffic Command" to the card with parameters for PVC address, enable, type of pattern to use, and traffic generation direction. For Release 9.2, both the switch software and firmware only support "network" direction for the traffic generation direction. The card then takes care of generating the traffic and continues until all frames/cells are sent or are disabled. When a card receives a disable message, it stops any traffic generation currently running. There is a **dsptrafficgen** command that lets you view the status of traffic generation, which gives you information such as the PVC, and if it is enabled or not.

Full Name

Configure traffic generation test

Syntax

cnftrafficgen <address> <E/D> <number of frames/cells> <pattern type> <N>

Related Commands

cnfoamlpbk, dspoamlpbk, dsptrafficgen, dspcons

Attributes

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

Example 1

cnftrafficgen 2

Description

Enable the Traffic Generation test feature on a specified PVC on a specified card.

System Response

```
sw99        TN      SuperUser        BPX 159.2.10Aug. 27 1998 08:59 GMT

       generating  supported
slot   traffic     in fw       Channel
----   -----       ------      -------
 2     Yes         Yes         2.2.6.18









Last Command: cnftrafficgen 2

Next Command:
```

Example 2

cnftrafficgen 2

Description

Enable the Traffic Generation test on the PVC with address of XX, transmit number of XX cells, send pattern type of XX, and send traffic in the direction of N (for network).

Table 1-40 cnftrafficgen—Parameters

Parameter	Description
address	Address of PVC that you want to configure the Traffic Generation test for.
e/d	Enable or disable the Traffic Generation test on the specified PVC.
number of frames/cells	Number of frames/cells to transmit.
pattern type	Type of byte pattern to send.
N	Direction to generate traffic. In Release 9.2, only ‘N’ option for Network is supported.

cnftrkparm (Configure Trunk Card Parameters)

Use the **cnftrkparm** command to set specified trunk parameters for the following front cards:

- UXM/UXM-E
- ALM/B
- AIT
- BTM
- NTC
- NTM
- BNI
- BXM/BXM-E

Function

Use the **cnftrkparm** command to optimize a network for particular traffic mixes. Use this command to configure any of the trunk-specific parameters associated with a trunk card. It applies to either a FastPacket trunk or a ATM trunk. For ATM trunks, **cnftrkparm** applies to both physical and virtual trunks. Spacer queues indicated for the CLP and FECN thresholds pertain to BTM cards in an IGX node.

You can also use this command to reconfigure trunk queue depths to meet the CEPT requirement for a maximum end-to-end delay of 10 milliseconds. For this purpose, enter the following:

cnftrkparm <*trunk number*> <*parameter index*> <*parameter value*>

where:

trunk number specifies the trunk.
parameter index is 2 (which corresponds to the NTS queue).
parameter value is 7 (which is the maximum allowable queue depth).

When the system receives this command and a trunk number, it displays the configurable parameters with an index number for each. The parameters vary with the trunk type, as the subsequent figures and tables show. Table 1-41, Table 1-42, and Table 1-43 list the parameters for trunks carrying FastPackets and ATM cells on different platforms as well as virtual trunks. Figure 1-45, Figure 1-46, Figure 1-47, and Figure 1-48 show the response when you specify a FastPacket line or trunk on a variety of platforms. A table follows one or two screen examples.

Configuring Virtual Trunks with cnftrkparm

BXM and UXM virtual trunks have the same configuration parameters for queues as physical trunks.

The integrated alarm thresholds for major alarms and the gateway efficiency factor is the same for all virtual trunks on the port. Note that BNI virtual trunks are supported by a single queue and do not support configuration of all the OptiClass queues on a single virtual trunk.

Configuring Trunk Queues Used by Real-Time VBR and Non-Real-Time VBR Connections

Qbin values on both ports and trunks used by rt-VBR connections and nrt-VBR connections can be configured separately. (To configure Qbin values on ports, use **cnfportq**.)

> **Note** The rt-VBR traffic type (or connection class) is supported on the IGX UXM and BPX BXM, ASI, and BNI cards. However, the rt-VBR class of service is not supported for BTM and ALM-A/B connection endpoints, nor is it supported on FastPacket trunks. It is also not supported on MGX 8850 or MGX 8220 interface shelves.

A rt-VBR connection uses the rt-VBR queue on a trunk. It shares this queue with voice traffic. The rt-VBR and voice traffic shares the default or user-configured parameters for the rt-VBR queue. These parameters are queue depth, queue CLP high and CLP low thresholds, EFCI threshold, and queue priority.

A nrt-VBR connection uses the nrt-VBR queue on a trunk. The configurable parameters are queue depth, queue CLP high and CLP low thresholds, EFCI threshold, and queue priority.

You can configure the Qbin values separately for rt-VBR and nrt-VBR classes on trunks using the **cnftrkparm** command. For rt-VBR, the **cnftrkparm** command configures Q-depth rt-VBR and Max Age rt-VBR. For nrt-VBR, the **cnftrkparm** command configures Q-depth nrt-VBR, Low CLP nrt-VBR, and High CLP nrt-VBR.

See Figure 1-51 for a sample **cnftrkparm** screen and the parameters that can be configured for the various service-type queues.

For information on configuring port queues used by rt-VBR and nrt-VBR connections, see the **cnfportq** command.

Attributes

Jobs: No Log: Yes Lock: Yes Node Type: IGX, BPX

Associated Commands

dsptrkstathist, **dsptrkstatcnf**

Syntax

cnftrkparm <trk number> <parm index> <parm value>

<trk number>	Specifies the trunk to configure (can be a virtual trunk specified with following format: *slot.port.vtrk*.
<parm index>	Specifies the parameter to change.
<parm value>	Specifies the value of the parameter.

Figure 1-45 cnftrkparm for an IGX Node

```
sw83           TN    SuperUser       IGX 8420    9.2       Aug. 23 1998 15:58 PST

PLN 13 Parameters:
 1 Yel Alm-In/Out (D) [   600/   600]      18 Red Alm-In/Out (D) [  2500/ 15000]
 2 Rx Max Age - rt-VBR   (D)   [ N/A]      19 Tx Max Age - rt-VBR   (D)   [  20]
 3 Rx EFCN  - BdataB     (D)   [ N/A]      20 Tx EFCN    - BdataB   (D)   [  30]
 4 Gateway Efficiency    (D)   [ N/A]
 5 EFCN     - Rx Space   (D)   [ N/A]      Tx Age Step2 (D)     Tx Age Step  (D)
 6 Low CLP  - Rx_Space   (%)   [ N/A]      21 BDataA [ 128]     23 BDataA [ 128]
 7 High CLP - Rx_Space   (%)   [ N/A]      22 BDataB [ 128]     24 BDataB [ 128]
Rx High CLP  (%)     Rx Low CLP   (%)      Tx High CLP  (%)     Tx Low CLP   (%)
 8 BDataA [ N/A]     10 BDataA [ N/A]      25 BDataA [ 100]     27 BDataA [ 100]
 9 BDataB [ N/A]     11 BdataB [ N/A]      26 BDataB [  75]     28 BDataB [  25]
Receive Queue Depth             (D)      Transmit Queue Depth            (D)
12 rt-VBR [ N/A]     15 BDataA [ N/A]      29 rt-VBR [  22]     32 BDataA [ 301]
13 Non TS [ N/A]     16 BDataB [ N/A]      30 Non TS [ 114]     33 BDataB [ 301]
14 TS     [ N/A]     17 HighPri[ N/A]      31 TS     [2616]     34 HighPri[ 100]

Last Command: cnftrkparm 13


Next Command:
```

Table 1-41 IGX Trunk Parameters

Index	Parameter	Description
1, 18	Yel/Red Alarm In/Out	Specifies a time period relating to when a trunk goes into a red or yellow alarm and after it comes out of the alarm state. The applicable type of alarm here stems from a physical line problem rather than from a statistical error. The purpose of this parameter is to prevent the switch from rerouting the connections after a very brief problem or from prematurely informing switch software that the trunk is back in service (after a failure). The implementation is • The "into" alarm value is the time the card waits after a local (red) or yellow (remote) problem occurs before the card alerts switch software of the problem. • The "out of" alarm value is the time the card waits after a local, physical problem is cleared before the card alerts switch software that the problem no longer exists.
2, 19	Rx/Tx Max. Age: - rt-VBR	Specifies a multiplier for 125-microsecond increments for the maximum age of rt-VBR (or voice) packets. For example, with the default of 20, the node discards rt-VBR (or voice) packets older than 2.5 seconds.
3, 20	Rx/Tx EFCN - BdataB	For packets or cells received from the trunk carrying Optimized Bandwidth Management Frame Relay, the node sets the FECN bit above this threshold.

Table 1-41 IGX Trunk Parameters (continued)

Index	Parameter	Description
4	Gateway Efficiency	Specifies an expected average number of FastPackets in each cell arriving from a trunk. The purpose of this parameter is to help switch software regulate bandwidth usage the cell bus in an IGX node. The range is 1.0–3.0. (This parameter does not apply to the BXM card.)
5	EFCN - Rx Space	Same as 3, 20 except that FECN - Rx Space sets the threshold in the Rx space queues in the AIT or BTM card. Rx space queues face toward the IGX node.
6, 7	Low-High CLP-Rx Space	Same as 8, 9 except this threshold is for setting CLP in receive spacer queues for data to send to the local node.
8, 9	Rx High CLP (Bdata A/BdataB)	Frame Relay cells/packets received from trunk with CLP bit set above this high threshold will be dropped and will continue to be dropped until the low threshold is crossed. Separate queues for Optimized Bandwidth Management and non-Optimized Bandwidth Management data. Given in terms of percent of queue depth.
10, 11	Rx Low CLP (Bdata A/BdataB)	Same as for 8, 9 except sets low threshold.
12–17	Receive Queue Depth (rt-VBR, NTS, TS, BData A, BData B, High Pri.)	Reserves RAM in the trunk card for each of the receive queues in terms of the number of packets.
25, 26	Tx High CLP	Same as 8, 9 except this is threshold for setting CLP in transmit queues for data to be output to the next link.
27, 28	Tx Low CLP	Same as for 25, 26 except sets low threshold.
29–34	Transmit Queue Depth	Reserves RAM in the trunk card for each of the transmit queues in terms of the number of packets.

Note For parameter 12, the system displays the following: “Warning—don't change Voice Q size, use Max Voice Age.”

Figure 1-46 cnftrkparm for a BPX Trunk

```
pubsbpx1       TN    SuperUser       BPX 8620 9.2 July 15 1998 09:37 GMT

TRK 1.1 Parameters
 1 Q Depth - rt-VBR    [  242] (Dec)    15 Q Depth  - CBR      [  600] (Dec)
 2 Q Depth - Non-TS    [  360] (Dec)    16 Q Depth  - nrt-VBR  [ 1000] (Dec)
 3 Q Depth - TS        [ 1000] (Dec)    17 Q Depth  - ABR      [ 9070] (Dec)
 4 Q Depth - BData A   [ 1000] (Dec)    18 Low  CLP - CBR      [ 100] (%)
 5 Q Depth - BData B   [ 8000] (Dec)    19 High CLP - CBR      [ 100] (%)
 6 Q Depth - High Pri  [ 1000] (Dec)    20 Low  CLP - nrt-VBR  [ 100] (%)
 7 Max Age - rt-VBR    [   20] (Dec)    21 High CLP - nrt-VBR  [ 100] (%)
 8 Red Alm - I/O (Dec) [  2500 / 15000] 22 Low  CLP - ABR      [  25] (%)
 9 Yel Alm - I/O (Dec) [  2500 / 15000] 23 High CLP - ABR      [  75] (%)
10 Low  CLP - BData A  [ 100] (%)       24 EFCN     - ABR      [  30] (Dec)
11 High CLP - BData A  [ 100] (%)       25 SVC Queue Pool Size [  144] (Dec)
12 Low  CLP - BData B  [  25] (%)
13 High CLP - BData B  [  75] (%)
14 EFCN     - BData B  [  30] (Dec)

This Command: cnftrkparm 1.1


Which parameter do you wish to change:
```

Figure 1-47 cnftrkparm for a BXM OC-12 Trunk

```
sw97           TRM   SuperUser       BPX 8620    9.2 Apr. 30 1998 13:14 GMT

TRK 13.1 Parameters
Trunk Type:        NNI
 1 Q Depth - rt-VBR    [  3000] (Dec)   15 Q Depth  - CBR      [  1200] (Dec)
 2 Q Depth - Non-TS    [  3000] (Dec)   16 Q Depth  - rt-VBR   [ 10000] (Dec)
 3 Q Depth - TS        [  1000] (Dec)   17 Q Depth  - ABR      [ 30000] (Dec)
 4 Q Depth - BData A   [ 20000] (Dec)   18 Low  CLP - CBR      [ 100] (%)
 5 Q Depth - BData B   [ 20000] (Dec)   19 High CLP - CBR      [ 100] (%)
 6 Q Depth - High Pri  [ 1000] (Dec)    20 Low  CLP - rtVBR    [ 100] (%)
 7 Max Age - rt-VBR    [   20] (Dec)    21 High CLP - rt-VBR   [ 100] (%)
 8 Red Alm - I/O (Dec) [  2500 / 15000] 22 Low  CLP - ABR      [  25] (%)
 9 Yel Alm - I/O (Dec) [  2500 / 15000] 23 High CLP - ABR      [  75] (%)
10 Low  CLP - BData A  [ 100] (%)       24 EFCN     - ABR      [  30] (Dec)
11 High CLP - BData A  [ 100] (%)       25 SVC Queue Pool Size [  144] (Dec)
12 Low  CLP - BData B  [  25] (%)
13 High CLP - BData B  [  75] (%)
14 EFCN     - BData B  [  30] (Dec)

Last Command: cnftrkparm 13.1


Next Command:
```

Note In Release 9.2.20 and higher, rt-VBR and voice connections both use the voice Qbin on the trunk. Similarly, rt-VBR and voice traffic both share the default or user-configured voice Qbin values for the trunk—Queue depth, CLP High/Low Threshold, EFCI Threshold, and Queue priority.

Table 1-42 BXM Trunk Parameters

Index	Parameter	Description
1	Q Depth - rt-VBR	Specifies the queue depth in cells for rt-VBR and voice traffic. This parameter relates to item 7, Max Age - rt-VBR: if you increase the value for Max Age - rt-VBR, the node increases the size of the rt-VBR (or voice) Packet Queue because more voice packets can accumulate due to a greater age. In Release 9.2, for BXM trunks, the rt-VBR and voice service types share the same queue (the rt-VBR queue). Similarly, for BXM trunks, rt-VBR and voice traffic share the default or user-configured voice Qbin values.
2	Q Depth - Non-TS	Specifies the queue depth in cells for non-time-stamped traffic.
3	Q Depth - TS	Specifies the queue depth in cells for time-stamped traffic.
4	Q Depth - BData A	Specifies the depth in cells for the bursty data A queue.
5	Q Depth - BData B	Specifies the depth in cells for the bursty data B queue.
6	Q Depth - High Pri	Specifies the queue depth in cells for high priority traffic.
7	Max Age - rt-VBR	Specifies a multiplier for 125-microsecond increments for the maximum age of rt-VBR (or voice) packets. For example, with the default of 20 microseconds, the node discards rt-VBR (or voice) packets older than 2.5 seconds. This value is the same as the default queue delay. The Max Age - rt-VBR (or voice) Qbin threshold can be calculated as follows: (20 * (125 microseconds) * num_ds0s/53 cells + 2) for any trunk. This parameter relates to item 1, Q Depth - rt-VBR: if you increase the value for Max Age - rt-VBR, the node increases the size of the Voice (or rt-VBR) Packet Queue because more rt-VBR (or voice) packets can accumulate due to a greater age.
8	Red Alm - I/O (Dec)	Specifies a time period relating to when a trunk goes into red alarm and after it comes out of the alarm state. The applicable type of alarm here stems from a physical line problem rather than from a statistical error. The purpose of this parameter is to prevent the switch from rerouting the connections after a very brief problem or from prematurely informing switch software that the trunk is back in service (after a failure). The implementation is: • The "into" alarm value is the time the card waits after a local, physical problem occurs before the card alerts switch software of the problem. • The "out of" alarm value is the time the card waits after a local, physical problem is cleared before the card alerts switch software that the problem no longer exists.

Table 1-42 BXM Trunk Parameters (continued)

Index	Parameter	Description
9	Yel Alm - I/O (Dec)	Specifies a time period relating to when a trunk goes into yellow alarm and after it comes out of the alarm state. The applicable type of alarm here stems from a physical line problem rather than from a statistical error. The purpose of this parameter is to prevent the switch from rerouting the connections after a very brief problem or from prematurely informing switch software that the trunk is back in service (after a failure). The implementation is: • The “into” alarm value is the time the card waits after a remote, physical problem occurs before the card alerts local switch software of the problem. • The “out of” alarm value is the time the card waits after a remote, physical problem is cleared before the card alerts local switch software that the problem no longer exists.
10	Low CLP - BData A	Specifies a percent of the Bursty Data A queue. When the number of cells in the queue falls below this percentage, the switch stops discarding cells with CLP=1. The default of 100% disables the function, which causes the switch to discard all cells with CLP=1.
11	High CLP - BData A	Specifies a percent of the Bursty Data A queue. When the number of cells in the queue reaches this percentage, the switch begins to discard cells with CLP=1. The default of 100% disables the function, which causes the switch to discard all cells with CLP=1 regardless of the cell count in the queue.
12	Low CLP - BData B	Specifies a percent of the Bursty Data B queue. When the number of cells in the queue falls below this percentage, the switch stops discarding cells with CLP=1.
13	High CLP - BData B	Specifies a percent of the Bursty Data B queue. When the number of cells in the queue reaches this percentage, the switch begins to discard cells with CLP=1.
14	EFCN - BData B	Specifies the number of cells in the Bursty Data B queue that causes the switch to send congestion notification to the destination node. The default is low in relation to the default queue depth so that notification begins to go out as soon as congestion begins.
15	Q Depth - CBR	Specifies the depth of the queue dedicated to CBR traffic.
16	Q Depth - nrt-VBR	Specifies the depth of the queue dedicated to nrt-VBR traffic.
17	Q Depth - ABR	Specifies the depth of the queue dedicated to ABR traffic.
18	Low CLP - CBR	Specifies a percent of the CBR queue. When the number of cells in the queue falls below this percentage, the node stops discarding cells with CLP=1. The default of 100% disables the function, which causes the switch to discard all cells with CLP=1 regardless of the cell count in the queue. The reason the default is 100% is that, with CBR, congestion is not an expected condition.

Table 1-42 BXM Trunk Parameters (continued)

Index	Parameter	Description
19	High CLP - CBR	Specifies a percent of the CBR queue. When the number of cells in the queue reaches this percentage, the node begins to discard cells with CLP=1. The default of 100% disables the function, which causes the switch to discard all cells with CLP=1 regardless of the cell count in the queue. The reason the default is 100% is that, with CBR, congestion is not an expected condition.
20	Low CLP - nrt-VBR	Specifies a percent of the nrt-VBR queue. When the number of cells in the queue falls below this percentage, the node stops discarding cells with CLP=1. The default of 100% disables the function, which causes the switch to discard all cells with CLP=1 regardless of the cell count in the queue. The reason the default is 100% is that, with VBR, congestion is not an expected condition.
21	High CLP - nrt-VBR	Specifies a percent of the nrt-VBR queue. When the number of cells in the queue reaches this percentage, the node begins to discard cells with CLP=1. The default of 100% disables the function, which causes the switch to discard all cells with CLP=1 regardless of the cell count in the queue. The reason the default is 100% is that, with VBR, congestion is not an expected condition.
22	Low CLP - ABR	Specifies a percent of the ABR queue. When the number of cells in the queue falls below this percentage, the node stops discarding cells with CLP=1.
23	High CLP - ABR	Specifies a percent of the ABR queue. When the number of cells in the queue reaches this percentage, the node begins to discard cells with CLP=1.
24	EFCN - ABR	Specifies the number of cells in the ABR queue that causes the switch to send congestion notification to the destination node. The default is low in relation to the default queue depth so that notification begins to go out as soon as congestion begins.
25	SVC Queue Pool Depth	Specifies the collective size of the queue depth for all SVC connections.

Figure 1-48 cnftrkparm for a Virtual Trunk

```
sw97           TN    SuperUser       BPX 15    9.2       Aug. 9 1998  10:11 GMT

TRK 1.1.1 Parameters
 8 Red Alm - I/O (Dec) [  2500 /  10000]
 9 Yel Alm - I/O (Dec) [  2500 /  10000]
15 Q Depth  - CBR      [ 2678] (Dec)
18 Low  CLP - CBR      [ 100] (%)
19 High CLP - CBR      [ 100] (%)





This Command: cnftrkparm 1.1.1


Which parameter do you wish to change:
```

Table 1-43 Virtual Trunk Parameters

Index	Parameter	Description
8	Red Alm - I/O (Dec)	Specifies a time period relating to when a trunk goes into red alarm and after it comes out of the alarm state. The applicable type of alarm here stems from a physical line problem rather than from a statistical error. The purpose of this parameter is to prevent the switch from rerouting the connections after a very brief problem or from prematurely informing switch software that the trunk is back in service (after a failure). The implementation is: • The “into” alarm value is the time the card waits after a local, physical problem occurs before the card alerts switch software of the problem. • The “out of” alarm value is the time the card waits after a local, physical problem is cleared before the card alerts switch software that the problem no longer exists.
9	Yel Alm - I/O (Dec)	Specifies a time period relating to when a trunk goes into yellow alarm and after it comes out of the alarm state. The applicable type of alarm here stems from a physical line problem rather than from a statistical error. The purpose of this parameter is to prevent the switch from rerouting the connections after a very brief problem or from prematurely informing switch software that the trunk is back in service (after a failure). The implementation is: • The “into” alarm value is the time the card waits after a remote, physical problem occurs before the card alerts local switch software of the problem. • The “out of” alarm value is the time the card waits after a remote, physical problem is cleared before the card alerts local switch software that the problem no longer exists.

Table 1-43 Virtual Trunk Parameters (continued)

Index	Parameter	Description
18	Low CLP - CBR	Specifies a percent of the CBR queue. When the number of cells in the queue falls below this percentage, the node stops discarding cells with CLP=1. The default of 100% disables the function, which causes the switch to discard all cells with CLP=1 regardless of the cell count in the queue. The reason the default is 100% is that, with CBR, congestion is not an expected condition.
19	High CLP - CBR	Specifies a percent of the CBR queue. When the number of cells in the queue reaches this percentage, the node begins to discard cells with CLP=1. The default of 100% disables the function, which causes the switch to discard all cells with CLP=1 regardless of the cell count in the queue. The reason the default is 100% is that, with CBR, congestion is not an expected condition.
19	High CLP	Specifies a percent of the transmit/receive CBR 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 Low CLP.

Figure 1-49 cnftrkparm for a UXM OC-3 Trunk

```
sw228          TN    SuperUser       IGX 8420    9.2.w2    Aug. 27 1998 18:25 PST

TRK  6.3 Parameters:
 1 Yel Alm-In/Out (D)  [  2500/ 10000]     18 Red Alm-In/Out (D) [  2500/ 10000]
 2 Rx Max Age - rt-VBR   (D)   [   20]     19 Tx Max Age - rt-VBR   (D)  [   20]
 3 Rx EFCN  - BdataB     (D)   [   30]     20 Tx EFCN    - BdataB   (D)  [   30]
 4 Gateway Efficiency    (D)   [  2.0]
 5 EFCN     - Rx Space   (D)   [  N/A]     Tx Age Step2  (D)   Tx Age Step   (D)
 6 Low CLP  - Rx_Space   (%)   [  N/A]     21 BDataA [  N/A]   23 BDataA [  N/A]
 7 High CLP - Rx_Space   (%)   [  N/A]     22 BDataB [  N/A]   24 BDataB [  N/A]
Rx High CLP   (%)    Rx Low CLP    (%)     Tx High CLP   (%)   Tx Low CLP    (%)
 8 BDataA [  100]    10 BDataA [  100]     25 BDataA [  100]   27 BDataA [  100]
 9 BDataB [   75]    11 BdataB [   25]     26 BDataB [   75]   28 BDataB [   25]
Receive Queue Depth               (D)      Transmit Queue Depth            (D)
12 rt-VBR  [ 1952]    15 BDataA [10000]    29 rt-VBR  [ 1952]   32 BDataA [10000]
13 Non TS [ 2925]    16 BDataB [10000]     30 Non TS [ 2924]   33 BDataB [10000]
14 TS     [ 1000]    17 HighPri[ 1000]     31 TS     [ 1000]   34 HighPri[ 1000]

This Command: cnftrkparm 6.3

sw228          TN    SuperUser       IGX 8420    9.2       Aug. 27 1998 18:26 PST

TRK  6.3 Parameters:
Rx Queue Depth(D)    Tx Queue Depth(D)    Rx EFCN       (D)    Tx EFCN       (D)
35 CBR       [  600]    38 CBR       [  600]
36 nrt-VBR   [ 5000]    39 rt-VBR    [ 5000]
37 ABR       [20000]    40 ABR       [20000]  47 ABR      [   30]    48 ABR    [   30]
Rx High CLP  (%)    Rx Low CLP       (%)      Tx High CLP   (%)    Tx Low CLP    (%)
41 CBR       [  100]   44 CBR     [  100]  49 CBR       [  100]      52 CBR    [  100]
42 nrt-VBR  [  100]   45 nrt-VBR     100]    50 nrt-VBR    [  100]    53 VBR    [  100]
43 ABR      [   75]    46 ABR        [   25]   51 ABR    [   75]    54 ABR    [   25]




This Command: cnftrkparm 6.3
```

Figure 1-50 cnftrkparm for a UXM T3 or E3 Trunk

```
sw228          TN    SuperUser       IGX 8420    9.2.w2    Aug. 27 1998 18:25 PST

TRK  8.1 Parameters:
 1 Yel Alm-In/Out (D)  [  2500/ 10000]     18 Red Alm-In/Out (D) [  2500/ 10000]
 2 Rx Max Age - rt-VBR   (D)   [   20]     19 Tx Max Age - rt-VBR   (D)  [   20]
 3 Rx EFCN  - BdataB     (D)   [   30]     20 Tx EFCN    - BdataB   (D)  [   30]
 4 Gateway Efficiency    (D)   [  2.0]
 5 EFCN     - Rx Space   (D)   [  N/A]     Tx Age Step2  (D)   Tx Age Step   (D)
 6 Low CLP  - Rx_Space   (%)   [  N/A]     21 BDataA [  N/A]   23 BDataA [  N/A]
 7 High CLP - Rx_Space   (%)   [  N/A]     22 BDataB [  N/A]   24 BDataB [  N/A]
Rx High CLP   (%)    Rx Low CLP    (%)     Tx High CLP   (%)   Tx Low CLP    (%)
 8 BDataA [  100]    10 BDataA [  100]     25 BDataA [  100]   27 BDataA [  100]
 9 BDataB [   75]    11 BdataB [   25]     26 BDataB [   75]   28 BDataB [   25]
Receive Queue Depth            (D)         Transmit Queue Depth            (D)
12 rt-VBR [  242]    15 BDataA [ 8000]     29 rt-VBR [  242]   32 BDataA [ 8000]
13 Non TS [  360]    16 BDataB [ 8000]     30 Non TS [  360]   33 BDataB [8000]
14 TS     [ 1000]    17 HighPri[ 1000]     31 TS     [ 1000]   34 HighPri[ 1000]

This Command: cnftrkparm 8.1
sw228          TN    SuperUser       IGX 8420    9.2       Aug. 27 1998 18:26 PST

TRK  8.1 Parameters:
Rx Queue Depth(D)    Tx Queue Depth(D)    Rx EFCN       (D)    Tx EFCN       (D)
35 CBR        [  400]    38 CBR    [  400]
36 nrt-VBR    [ 5000]    39 VBR    [ 5000]
37 ABR        [10000]    40 ABR    [10000]    47 ABR    [   30]       48 ABR    [   30]
Rx High CLP   (%)        Rx Low CLP    (%)    Tx High CLP   (%)       Tx Low CLP    (%)
41 CBR       [  100]    44 CBR     [  100]    49 CBR       [  100]    52 CBR     [ 100]
42 nrt-VBR   [  100]    45 nrt-VBR [  100]    50 nrt-VBR    [  100]   53 nrt-VBR [ 100]
43 ABR    [   80]    46 ABR    [   60]    51 ABR    [   80]    54 ABR    [   60]
```

Figure 1-51 cnftrkparm for a BXM Trunk

```
pubsbpx1       TN    silves:1        BPX 8620  9.2.2G    July 16 1999 10:50 PDT




TRK 2.4 Parameters
 1 Q Depth - rt-VBR    [  885] (Dec)    15 Q Depth   - CBR     [  600] (Dec)
 2 Q Depth - Non-TS    [ 1324] (Dec)    16 Q Depth   - nrt-VBR [ 5000] (Dec)
 3 Q Depth - TS        [ 1000] (Dec)    17 Q Depth   - ABR     [20000] (Dec)
 4 Q Depth - BData A   [10000] (Dec)    18 Low  CLP  - CBR     [  60] (%)
 5 Q Depth - BData B   [10000] (Dec)    19 High CLP  - CBR     [  80] (%)
 6 Q Depth - High Pri  [ 1000] (Dec)    20 Low  CLP  - nrt-VBR [  60] (%)
 7 Max Age - rt-VBR    [   20] (Dec)    21 High CLP  - nrt-VBR [  80] (%)
 8 Red Alm - I/O (Dec) [   2500 /  10000]22 Low CLP/EPD-ABR     [  60] (%)
 9 Yel Alm - I/O (Dec) [   2500 /  10000]23 High CLP  - ABR     [  80] (%)
10 Low  CLP - BData A  [ 100] (%)       24 EFCN      - ABR     [  20] (%)
11 High CLP - BData A  [ 100] (%)       25 SVC Queue Pool Size [    0] (Dec)
12 Low  CLP - BData B  [  25] (%)
13 High CLP - BData B  [  75] (%)
14 EFCN     - BData B  [  30] (Dec)

This Command: cnftrkparm 2.4
```

Physical and Virtual Parameters You Can Configure Using cnftrkparm

All virtual trunks on a BNI card are supported by a single queue; therefore, you cannot configure all the Advanced CoS Management queues on a single virtual trunk.

The UXM and BXM share the same queueing architecture. The egress cell traffic out a port is queued in two stages. First they are queued per virtual interface (VI), each of which supports a virtual trunk. Within each virtual interface, the traffic is queued according to its normal Advanced CoS Management traffic type. In other words, voice, Time-Stamped, Non-Time-Stamped, High-Priority, BData, BDataB, CBR, rt-VBR, nrt-VBR, and ABR traffic is queued separately.

The overall queue depth of the virtual interface is the sum of all the queue depths for all the available queues. Since each virtual trunk occupies one virtual interface (VI), the overall queue depth available for the virtual trunk is that of its VI. You do not configure the virtual interface directly, however, you use the **cnftrkparm** command to configure the queues within the virtual trunk.

Although the traffic consists of Frame Relay in cells, the traffic can pass through a BPX node. Therefore, the Bursty Data queues exist in the BPX node.

BXM and UXM virtual trunks have all the configuration parameters for queues that physical trunks have. The integrated alarm thresholds for major alarms and the gateway efficiency factor is the same for all virtual trunks on the port. Note that BNI virtual trunks are supported by a single queue and do not support configuration of all the Advanced CoS Management (formerly OptiClass) queues on a single virtual trunk.

Table 1-44 provides a list of physical and virtual parameters that you can configure using **cnftrkparm**. X in the table indicates that the parameter is configurable. X* in the virtual trunk column indicates the parameter is a physical parameter, and changing the value for one virtual trunk on the port will automatically cause all virtual trunks on the port to be updated with the same value.

Table 1-44 cnftrkparm—Configurable Parameters for Physical and Virtual Trunks

Description of cnftrkparm Parameters	BXM		UXM	
	Physical	Virtual	Physical	Virtual
Queue Depth - rt-VBR	X	X	X	X
Queue Depth - NTS	X	X	X	X
Queue Depth - TS	X	X	X	X
Queue Depth - Bdata A	X	X	X	X
Queue Depth - Bdata B	X	X	X	X
Queue Depth - High Priority	X	X	X	X
Queue Depth - CBR	X	X	X	X
Queue Depth - nrt-VBR	X	X	X	X
Queue Depth - ABR	X	X	X	X
Max Age - rt-VBR	X	X	X	X
Red Alm - I/O	X	X*	X	X*
Yel Alm - I/O	X	X*	X	X*
Lo/Hi CLP and EFCN Bdata A	X	X	X	X
Lo/Hi CLP and EFCN Bdata B	X	X	X	X
Lo/Hi CLP for CBR	X	X	X	X

Table 1-44 cnftrkparm—Configurable Parameters for Physical and Virtual Trunks (continued)

Description of cnftrkparm Parameters	BXM		UXM	
	Physical	Virtual	Physical	Virtual
Lo/Hi CLP for VBR	X	X	X	X
Low/Hi CLP, and EFCN for ABR	X	X	X	X
EPD and EFCN for CBR and nrt-VBR			X	X
SVC Queue pool size	X	X		
Gateway Efficiency			X	X*

cnftrkstats (Configure Trunk Statistics Collection)

The **cnftrkstats** command configures collection of statistics for a selected trunk.

In previous releases of the BPX and IGX switch software, only statistics from QBIN 1-9 were collected on AutoRoute trunks. Starting from switch software release 9.3.10, the switch allows the collection of additional QBIN statistics. Following is a summary of all QBIN statistics collected by the BPX and IGX. Qbin statistics are Cells Served, Cells Discarded, and Cells Received.

- UXM and BXM qbins 1-9 on AutoRoute trunks.
- BXM qbins 0-3, 9 on AutoRoute ports.
- UXM qbins 2,3, 7-9 on AutoRoute ports.
- UXM and BXM qbins 10-15 on VSI ports and trunks.

All other Qbins are unused, and the switch does not provide statistics for them. Also starting in switch software release 9.3.10, the switch provides the collection of Qbin Cells Discarded statistics via SNMP for the above mentioned Qbins.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

dsptrkstatcnf, **dsptrkstathist**

Syntax

cnftrkstats <line> <stat> <interval> <e|d> [<samples> <size> <peaks>]

<line>	Specifies the trunk to configure.
<stat>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<e|d>	Enables/disables a statistic. E to enable; D to disable.
[samples]	Specifies the number of samples to collect (1–255).
[size]	Specifies the number of bytes per data sample (1, 2 or 4).
[peaks]	Enables/disables collection of 10-second peaks. Y enables; N disables.

Function

The **cnftrkstats** command is primarily a debug command. It configures the collection of statistics for a physical or virtual trunk. After displaying all statistic types for the trunk, the system prompts for "statistic type." Enter the index number associated with the statistic.

Not all types of statistics are available for all lines. Unavailable selections appear in half-tone. Table 1-45 lists the types of statistics that are configurable for FastPacket T1 trunks and ATM T3 trunks. The subsequent figures show the screens associated with T1 packet trunks and T3 ATM trunks.

Table 1-45 Statistics Configurable for FastPacket T1 trunks and ATM T3 Trunks

Categories of Statistics Types	Categories of Statistics Types
Line faults	Line errors and errored seconds
Frame Slips and Loss	Path errors
Transmit packets dropped	Cell framing errors
Packets transmitted for various packet types	EFCN packets transmitted to bus
Packets dropped for various packet types	Queue Service Engine (QSE) cells transmitted
Bursty data CLP packets and cells dropped	Spacer packets transmitted and dropped for each of the 16 queues
Errored seconds	The number of seconds in which errors occurred

Figure 1-52 is the only screen for T1 trunks.

Figure 1-52 cnftrkstats—Configure T1 Trunk Statistics

```
sw83          TN    SuperUser       IGX 8420    9.2       Aug. 1 1998  14:42 PST

Line Statistic Types
 1) Bipolar Violations                  18) Voice Packets Transmitted
 3) Out of Frames                       19) TS Packets Transmitted
 4) Losses of Signal                    20) NTS Packets Transmitted
 5) Frames Bit Errors                   21) CC Packets Transmitted
 6) CRC Errors                          22) BDA Packets Transmitted
 9) Packet Out of Frames                23) BDB Packets Transmitted
10) Packet CRC Errors                   24) Total Packets Transmitted
12) Tx Voice Packets Dropped            25) BDA CLP Packets Dropped
13) Tx TS Packets Dropped               26) BDB CLP Packets Dropped
14) Tx NTS Packets Dropped              27) BDA EFCN Pkts Transmitted
15) Tx CC Packets Dropped               28) BDB EFCN Pkts Transmitted
16) Tx BDA Packets Dropped              149) Bdata A CLP Packets Tx to Line
17) Tx BDB Packets Dropped              150) Bdata B CLP Packets Tx to Line

Last Command: cnftrkstats 13


Next Command:
```

The following screens, shown in Figure 1-53 through Figure 1-59, pertain to an ATM trunk (AIT card) on an IGX node. Other trunk types and cards have other parameters. To see the list of these, enter the command and continue from page to page without entering an index number.

Figure 1-53 cnftrkstats—Configure ATM Trunk Statistics (Screen 1)

```
sw83           TN    SuperUser       IGX 8420    9.2       Aug. 1 1998  14:45 PST

Line Statistic Types
 3) Out of Frames                       22) BDA Packets Transmitted
 4) Losses of Signal                    23) BDB Packets Transmitted
10) Packet CRC Errors                   24) Total Packets Transmitted
12) Tx Voice Packets Dropped            25) BDA CLP Packets Dropped
13) Tx TS Packets Dropped               26) BDB CLP Packets Dropped
14) Tx NTS Packets Dropped              27) BDA EFCN Pkts Transmitted
15) Tx CC Packets Dropped               28) BDB EFCN Pkts Transmitted
16) Tx BDA Packets Dropped              29) Line Code Violations
17) Tx BDB Packets Dropped              30) Line Errored Seconds
18) Voice Packets Transmitted           31) Line Severely Err Secs
19) TS Packets Transmitted              32) Line Parity Errors
20) NTS Packets Transmitted             33) Errored Seconds - Line
21) CC Packets Transmitted              34) Severely Err Secs - Line

This Command: cnftrkstats 11


Continue?
```

Figure 1-54 cnftrkstats—Configure ATM Trunk Statistics (Screen 2)

```
sw83           TN    SuperUser       IGX 8420    9.2       Aug. 1 1998  14:46 PST

Line Statistic Types
35) Path Parity Errors                  48) Tx nrt-VBR Cells Drpd
36) Errored Secs - Path                 49) Tx TimeStamped Cells Drpd
37) Severely Err Secs - Path            50) Tx NTS Cells Dropped
38) Severely Err Frame Secs             51) Tx Hi-Pri Cells Drpd
39) AIS Signal Seconds                  52) Tx BData A Cells Drpd
40) Unavail. Seconds                    53) Tx BData B Cells Drpd
41) BIP-8 Code Violations               54) Voice Cells Tx to line
42) Cell Framing Errored Seconds        55) TimeStamped Cells Tx to ln
43) Cell Framing Sev. Err Secs.         56) NTS Cells Tx to line
44) Cell Framing Sec. Err Frame Secs    57) Hi-Pri Cells Tx to line
45) Cell Framing Unavail. Secs.         58) BData A Cells Tx to line
46) ATM Cell Header HEC Errs            59) BData B Cells Tx to line
47) Pkts. Rx from Muxbus                60) Half Full cells Tx to ln

This Command: cnftrkstats 11


Continue?
```

Figure 1-55 cnftrkstats—Configure ATM Trunk Statistics (Screen 3)

```
sw83           TN     SuperUser       IGX 8420    9.2      Aug. 1 1998  14:47 PST

Line Statistic Types
61) Full cells Tx to ln                74) Rx Hi-pri Pkts Dropped
62) Total Cells Tx to line             75) Rx BDA Pkts Dropped
63) Tx Bdata A CLP Cells Drpd          76) Rx BDB Pkts Dropped
64) Tx Bdata B CLP Cells Drpd          77) Voice pkts Tx to Muxbus
65) Bdata A EFCN Cells Tx ln           78) TS pkts Tx to Muxbus
66) Bdata B EFCN Cells Tx ln           79) NTS pkts Tx to Muxbus
67) Half Full Cells Rx from ln         80) Hi-pri pkts Tx to Muxbus
68) Full Cells Rx from line            81) Bdata A pkts Tx to Muxbus
69) Total Cells Rx from line           82) Bdata B pkts Tx to Muxbus
70) Total pkts Rx from line            83) Rx Bdata A CLP pkts drpd
71) Rx Voice Pkts Dropped              84) Rx Bdata B CLP pkts drpd
72) Rx TS Pkts Dropped                 85) Bdata A EFCN Pkts Tx muxbus
73) Rx NTS Pkts Dropped                86) Bdata B EFCN Pkts Tx muxbus

This Command: cnftrkstats 11


Continue?
```

Figure 1-56 cnftrkstats—Configure ATM Trunk Statistics (Screen 4)

```
sw83           TN     SuperUser       IGX 8420    9.2     Aug. 1 1998  14:48 PST

Line Statistic Types
87) Total Pkts Tx to muxbus            100) Rx Spacer 2 Pkts dropped
88) Rx voice cells drpd                101) Rx Spacer 3 Pkts dropped
89) Rx TimeStamped Cells drpd          102) Rx Spacer 4 Pkts dropped
90) Rx NTS Cells dropped               103) Rx Spacer 5 Pkts dropped
91) Rx Hi-pri Cells dropped            104) Rx Spacer 6 Pkts dropped
92) Rx Bdata A Cells dropped           105) Rx Spacer 7 Pkts dropped
93) Rx Bdata B Cells dropped           106) Rx Spacer 8 Pkts dropped
94) Rx Bdata A CLP cells drpd          107) Rx Spacer 9 Pkts dropped
95) Rx Bdata B CLP cells drpd          108) Rx Spacer 10 Pkts dropped
96) Rx Spacer CLP Pkts drpd            109) Rx Spacer 11 Pkts dropped
97) Spacer EFCN Pkts Tx to Muxbus      110) Rx Spacer 12 Pkts dropped
98) Frame Sync Errors                  111) Rx Spacer 13 Pkts dropped
99) Rx Spacer 1 Pkts dropped           112) Rx Spacer 14 Pkts dropped

This Command: cnftrkstats 11
```

Figure 1-57 cnftrkstats—Configure ATM Trunk Statistics (Screen 5)

```
sw83           TN    SuperUser       IGX 8420    9.2      Aug. 1 1998  14:49 PST

Line Statistic Types
113) Rx Spacer 15 Pkts dropped         126) Spacer 10 Pkts Tx to Muxbus
114) Rx Spacer 16 Pkts dropped         127) Spacer 11 Pkts Tx to Muxbus
115) Rx Spacer Pkts drpd               128) Spacer 12 Pkts Tx to Muxbus
116) Spacer 0 Pkts Tx to Muxbus        129) Spacer 13 Pkts Tx to Muxbus
117) Spacer 1 Pkts Tx to Muxbus        130) Spacer 14 Pkts Tx to Muxbus
118) Spacer 2 Pkts Tx to Muxbus        131) Spacer 15 Pkts Tx to Muxbus
119) Spacer 3 Pkts Tx to Muxbus        132) Spacer 16 Pkts Tx to Muxbus
120) Spacer 4 Pkts Tx to Muxbus        133) Rx Voice QSE Cells Tx
121) Spacer 5 Pkts Tx to Muxbus        134) Rx Time Stamped QSE Cells Tx
122) Spacer 6 Pkts Tx to Muxbus        135) Rx NTS QSE Cells Tx
123) Spacer 7 Pkts Tx to Muxbus        136) Rx Hi Priority QSE Cells Tx
124) Spacer 8 Pkts Tx to Muxbus        137) Rx BData A QSE Cells Tx
125) Spacer 9 Pkts Tx to Muxbus        138) Rx Bdata B QSE Cells Tx

This Command: cnftrkstats 11
```

Figure 1-58 cnftrkstats—Configure ATM Trunk Statistics (Screen 6)

```
sw83           TN    SuperUser       IGX 8420    9.2       Aug. 1 1998  15:02 PST

Line Statistic Types
139) Rx BData A EFCN QSE Cells Tx      152) Cell Framing Yel Transitions
140) Rx BData B EFCN QSE Cells Tx      153) AIS Transition Count
141) FEBE Counts                       161) CGW Packets Rx From IGX Net
142) FERR Counts (M or F bit)          162) CGW Cells Tx to Line
143) Cell Framing FEBE Err Secs        163) CGW Frms Relayed to Line
144) Cell Framing FEBE Sev. Err. Secs.  164) CGW Aborted Frames Tx to Line
145) Cell Framing FEBE Counts          165) CGW Dscd Pkts From Abted Frms
146) Cell Framing FE Counts            166) CGW 0-Lngth Frms Rx from Line
147) ATM CRC Errored Seconds           167) CGW Packets Tx to IGX Net
148) ATM CRC Severely Err. Secs.       168) CGW Cells Rx from Line
149) Bdata A CLP Packets Tx to Line    169) CGW Frms Relayed from Line
150) Bdata B CLP Packets Tx to Line    170) CGW Aborted Frms Rx From Line
151) Yellow Alarm Transition Count     171) CGW Dscd Cells From Abted Frms

This Command: cnftrkstats 11
```

Figure 1-59 cnftrkstats—Configure ATM Trunk Statistics (Screen 7)

```
sw83           TN    SuperUser       IGX 8420    9.2       Aug. 1 1998  14:51 PST

Line Statistic Types
172) CGW Bd CRC32 Frms Rx from Line     185) OAM Valid OAM Cells Rx
173) CGW Bd Lngth Frms Rx from Line     186) OAM Loopback Cells Rx
174) CGW Bd CRC16 Frms Rx from IGX      187) OAM AIS Cells Rx
175) CGW Bd Length Frms Rx from IGX     188) OAM FERF Cells Rx
176) CGW 0-Length Frms Rx from IGX      189) OAM RTD Cells Rx
177) OAM Valid OAM Cells Tx             190) OAM RA Cells Rx
178) OAM Loopback Cells Tx              191) OAM Invalid OAM Cells Rx
179) OAM AIS Cells Tx                   192) OAM CC Cells Rx
180) OAM FERF Cells Tx
181) OAM RTD Cells Tx
182) OAM RA Cells Tx
183) OAM Invalid Supv Packets Rx
184) OAM CC Cells Tx

This Command: cnftrkstats 11
```

Figure 1-60 cnftrkstats—Configure Trunk Statistics UXM (IGX)

```
neelix         TRM   Cisco           IGX 8420  9.3.1M    May  31 2000 01:42 GMT

Virtual Interface Statistic Types

 1) QBIN: Voice Cells Tx to line       14) QBIN: Tx BData A Cells Discarded
 2) QBIN: TimeStamped Cells Tx to ln   15) QBIN: Tx BData B Cells Discarded
 3) QBIN: NTS Cells Tx to line         16) QBIN: Tx CBR Cells Discarded
 4) QBIN: Hi-Pri Cells Tx to line      17) QBIN: Tx ABR Cells Discarded
 5) QBIN: BData A Cells Tx to line     18) QBIN: Tx nrt-VBR Cells Discarded
 6) QBIN: BData B Cells Tx to line     19) QBIN: Tx NTS Cells Received
 7) QBIN: Tx CBR Cells Served          20) QBIN: Tx Hi-Pri Cells Received
 8) QBIN: Tx nrt-VBR Cells Served      21) QBIN: Tx Voice Cells Received
 9) QBIN: Tx ABR Cells Served          22) QBIN: Tx TS Cells Received
10) QBIN: Tx NTS Cells Discarded       23) QBIN: Tx BData A Cells Received
11) QBIN: Tx Hi-Pri Cells Discarded    24) QBIN: Tx BData B Cells Received
12) QBIN: Tx Voice Cells Discarded     25) QBIN: Tx CBR Cells Received
13) QBIN: Tx TS Cells Discarded        26) QBIN: Tx ABR Cells Received

This Command: cnftrkstats 5.2


Continue?

neelix         TRM   Cisco           IGX 8420  9.3.1M    May  31 2000 01:42 GMT

Virtual Interface Statistic Types

27) QBIN: Tx nrt-VBR Cells Received    40) CGW: Packets Rx From Network
28) VI: Cells rcvd w/CLP=1             41) CGW: Cells Tx to Line
29) VI: OAM cells received             42) CGW: NIW Frms Relayed to Line
30) VI: Cells tx w/CLP=1               43) CGW: SIW Frms Relayed to Line
31) VI: Cells received w/CLP=0         44) CGW: Aborted Frames Tx to Line
32) VI: Cells discarded w/CLP=0        45) CGW: Dscd Pkts
33) VI: Cells discarded w/CLP=1        46) CGW: 0-Length Frms Rx from Network
34) VI: Cells transmitted w/CLP=0      47) CGW: Bd CRC16 Frms Rx from Network
35) VI: OAM cells transmitted          48) CGW: Bd Lngth Frms Rx from Network
36) VI: RM cells received              49) CGW: OAM RTD Cells Tx
37) VI: RM cells transmitted           54) CGW: Packets Tx to Network
38) VI: Cells transmitted              55) CGW: Cells Rx from Line
39) VI: Cells received                 56) CGW: NIW Frms Relayed from Line

This Command: cnftrkstats 5.2


Continue?

neelix         TRM   Cisco           IGX 8420  9.3.1M    May  31 2000 01:43 GMT

Virtual Interface Statistic Types

57) CGW: SIW Frms Relayed from Line    78) QBIN: Tx Q11 Cells Received
58) CGW: Abrt Frms                     79) QBIN: Tx Q12 Cells Served
59) CGW: Dscd Cells                    80) QBIN: Tx Q12 Cells Discarded
60) CGW: 0-Lngth Frms Rx from Line     81) QBIN: Tx Q12 Cells Received
61) CGW: Bd CRC32 Frms Rx from Line    82) QBIN: Tx Q13 Cells Served
62) CGW: Bd Lngth Frms Rx from Line    83) QBIN: Tx Q13 Cells Discarded
63) CGW: OAM RTD Cells Rx              84) QBIN: Tx Q13 Cells Received
64) CGW: OAM Invalid OAM Cells Rx      85) QBIN: Tx Q14 Cells Served
73) QBIN: Tx Q10 Cells Served          86) QBIN: Tx Q14 Cells Discarded
74) QBIN: Tx Q10 Cells Discarded       87) QBIN: Tx Q14 Cells Received
```

```
75) QBIN: Tx Q10 Cells Received         88) QBIN: Tx Q15 Cells Served
76) QBIN: Tx Q11 Cells Served           89) QBIN: Tx Q15 Cells Discarded
77) QBIN: Tx Q11 Cells Discarded        90) QBIN: Tx Q15 Cells Received

This Command: cnftrkstats 5.2

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:35
GMT
```

Figure 1-61 cnftrkstats—Configure Trunk Statistics BXM (BPX)

```
Virtual Interface Statistic Types

 7) Tx Voice Cells Served              32) Tx BData A Cells Discarded
 8) Tx TS Cells Served                 33) Tx BData B Cells Discarded
 9) Tx NTS Cells Served                34) Tx CBR Cells Discarded
10) Tx Hi-Pri Cells Served             35) Tx ABR Cells Discarded
11) Tx BData A Cells Served            36) Tx VBR Cells Discarded
12) Tx BData B Cells Served            37) Egress NTS Cells Rx
19) Tx CBR Cells Served                38) Egress Hi-Pri Cells Rx
20) Tx VBR Cells Served                39) Egress Voice Cells Rx
21) Tx ABR Cells Served                40) Egress TS Cells Rx
28) Tx NTS Cells Discarded             41) Egress BData A Cells Rx
29) Tx Hi-Pri Cells Discarded          42) Egress BData B Cells Rx
30) Tx Voice Cells Discarded           43) Egress CBR Cells Rx
31) Tx TS Cells Discarded              44) Egress ABR Cells Rx

This Command: cnftrkstats 12.2

Continue? y

rogue          TN    Cisco           BPX 8620  9.3.10 July 14 2000 11:35
GMT

Virtual Interface Statistic Types

45) Egress VBR Cells Rx                58) Tx Q10 Cells Served
46) Total Cells Tx from port           59) Tx Q10 Cells Discarded
47) Cells RX with CLP0                 60) Egress Q10 Cells Rx
48) Cells Rx with CLP1                 61) Tx Q11 Cells Served
49) Cells RX Discard with CLP0         62) Tx Q11 Cells Discarded
50) Cells RX Discard with CLP1         63) Egress Q11 Cells Rx
51) Cells TX with CLP0                 64) Tx Q12 Cells Served
52) Cells TX with CLP1                 65) Tx Q12 Cells Discarded
53) BXM: Total Cells RX                66) Egress Q12 Cells Rx
54) Ingress OAM Cell Count             67) Tx Q13 Cells Served
55) Egress OAM Cell Count              68) Tx Q13 Cells Discarded
56) Ingress RM cell count              69) Egress Q13 Cells Rx
57) Egress RM cell count               70) Tx Q14 Cells Served

This Command: cnftrkstats 12.2

Continue? y

rogue          TN    Cisco           BPX 8620  9.3.10 July 14 2000 11:35
GMT

Virtual Interface Statistic Types

71) Tx Q14 Cells Discarded
72) Egress Q14 Cells Rx
73) Tx Q15 Cells Served
74) Tx Q15 Cells Discarded
75) Egress Q15 Cells Rx

This Command: cnftrkstats 12.2

Statistic Type:
```

cnftstparm (Configure Card Test Parameters)

The **cnftstparm** command sets parameters for the internal diagnostic self-tests that you can perform for each card type in the node.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

cnfdiagparm, **dspcderrs**, **prtcderrs**, **tststats**

Syntax

cnftstparm <tp> <freq> <s_e> <s_inc> <s_thr> <s_to> <b_e> <b_inc> <b_thr>

<tp>	Specifies the card type.
<freq>	Specifies the time between the completion of one test and the start of the next (in seconds; default is card-dependent). Select a value in the range 1 – 65535 seconds. Default for BCC card is 1600 seconds. The recommended value for the BCC card is 1600 seconds.
<s_e>	Enables/disables the card self-test. E to enable; D to disable.
<s_inc>	Specifies the threshold counter increment for self-test failures. Counter for each card-type: each failure increments. Default is 100.
<s_thr>	Specifies the failure threshold for self-tests. Default is 300.
<s_to>	Specifies time to wait for a self-test response (in seconds). How long to wait for a response depends on the card. The recommended value for the self-test time-out value on the BCC card is 800 seconds. The value on the standby controller card will be maintained even if the active timeout value is less than 800, which prevents the self-test timeout value from changing during a switchover (after a **switchcc** command is run). For example, if you change the self-test time-out value to 900 on the standby controller card, and then do a **switchcc**, the self-test time-out value on the new active controller card will remain 900.
<b_e>	Enables/disables the card background test. E to enable; D to disable. Available tests depend on the card; some are not enabled.
<b_inc>	Specifies the threshold counter increment for background test failures.
<b_thr>	Specifies the failure threshold for background tests.

Function

This command sets internal diagnostic, self-test parameters. Upon receiving this command, the system displays a two-page screen illustrating each of the various card types equipped in the node along with their self-test parameters. Each card has two tests: a diagnostic self-test and a background test. The self-test affects the normal operation of the card. The background test can execute while the card is carrying traffic. Self-test and background tests are run on standby cards. Only background tests are executed on active cards.

The following is a list of the configurable test parameters for each card type:

- Frequency for Test Execution (sec)
- Enable/Disable Self-Test (e or d)
- Self-Test Failure Increment
- Self-Test Failure Threshold
- Time-out For Self Test (sec)
- Enable/Disable Background Test (e or d)
- Background Test Failure Increment
- Background Test Failure Threshold

With Release 9.3.20, the IGX 8400 supports the Universal Router Module (URM). The URM provides IOS-based voice support and basic routing functions. The URM is a combination of a URM front card and a 2FE2V back card. The URM hardware consists of an embedded UXM that provides the ATM interface to the IGX network and an embedded IOS-based router. The embedded UXM is based on UXM-E hardware. It is logically a one-port UXM without physical interfaces and provides functionality similar to the UXM/UXM-E modules in the IGX.

The URM supports card self-test and background test. The **cnftstparm** command is used to enable, disable, or configure the self-test and background test on the URM. The tests apply only to the embedded UXM side of the card.

Figure 1-62 shows the first page of the **cnftstparm** display for a BPX node.

Figure 1-62 cnftstparm—Parameters on a BPX Node

```
sw45           TN    SuperUser       BPX 15    9.2 Aug. 27 1998 16:04 PDT

Card    Test   - - - - - - Self Test - - - - - - -   - - Background Test - - -
Type    Freq   Enable        Inc   Thresh  Timeout   Enable        Inc   Thresh
----    -----  --------  -------  -------  -------   --------  -------  -------
BCC      1600  Enabled       100      300      800   N/A           100      300
ASM       300  Disabled      100      300       60   N/A           100      300
BNI-T3    300  Enabled       100      300      150   N/A           100      300
BNI-E3    300  Enabled       100      300      150   N/A           100      300
ASI-E3    900  Enabled       100      300      800   Enabled       100      300
ASI-T3    900  Enabled       100      300      800   Enabled       100      300
ASI-155   900  Enabled       100      300      800   Enabled       100      300
BNI-155   300  Enabled       100      300      150   N/A           100      300
BXM      2000  Disabled      100      300     1800   Enabled       100      300



Last Command: cnftstparm


Next Command:
```

To see the second screen, enter y at the Continue prompt.

Figure 1-63 shows the **cnftstparm** display for an IGX node and the configuration of a Universal Router Module (URM).

Figure 1-63 cnftstparm—Parameters on an IGX 8420 Node with a URM

```
sw190          TRM   Cisco          IGX 8420  9.3.2l    Oct. 10 2000 04:23 GMT

Card   Test    - - - - - - Self Test - - - - - - -   - - Background Test - - -
Type   Freq    Enable        Inc   Thresh  Timeout   Enable        Inc   Thresh
----   -----   --------  -------  -------  -------   --------  -------  -------
PSM      300   Enabled       100      300       31   N/A           100      300
HDM      300   Enabled       100      300       80   Enabled       100      300
LDM      300   Enabled       100      300       80   Enabled       100      300
NTM      300   Enabled       100      300       31   N/A           100      300
FRM      300   Enabled       100      300       80   Enabled       100      300
MT3      300   Enabled       100      300       50   N/A           100      300
CVM      300   Enabled       100      300      300   N/A           100      300
NPM      180   Enabled       100      300      120   N/A           100      300
ARM      300   Enabled       100      300       60   N/A           100      300
BTM      300   Enabled       100      300      120   N/A           100      300
FTM      300   Enabled       100      300       80   Disabled      100      300
UFM      300   Enabled       100      300       80   Enabled       100      300

This Command:cnftstparm


Continue? y

                          --------- Screen 2 ----------

sw190          TRM   Cisco          IGX 8420  9.3.2l    Oct. 10 2000 04:24 GMT

Card   Test    - - - - - - Self Test - - - - - - -   - - Background Test - - -
Type   Freq    Enable        Inc   Thresh  Timeout   Enable        Inc   Thresh
----   -----   --------  -------  -------  -------   --------  -------  -------
UFMU     300   Enabled       100      300       80   Enabled       100      300
ALM      300   Enabled       100      300      120   N/A           100      300
UVM      300   Disabled      100      300       60   N/A           100      300
UXM      300   Enabled       100      300      800   Enabled       100      300
URM      300   Enabled       100      300      800   Enabled       100      300







Last Command:cnftstparm URM 300 E 100 300 800 E 100 300
```

Enter the card type at the prompt to begin modifying the test parameter.

cnfuiparm (Configure User Interface Parameters)

The **cnfuiparm** command sets various control terminal user interface parameters.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnfnodeparm, dsptsmap

Syntax

cnfuiparm <parameter number> <value>

<parameter number>	Specifies the index number of the parameter to set.
<value>	Specifies the new parameter value to enter.

Function

This command lets you set user interface parameters for the control terminal on the local node. It may be necessary to change these parameters in special circumstances, such as when you need to observe a screen for a long period of time or when modem password protection makes logging in difficult. Table 1-46 lists the user interface parameters. Figure 1-64 illustrates the associated display.

Table 1-46 User Interface Parameters that are Configurable with cnfuiparm

No.	Parameter	Description	Default*
1	Logout Time	Idle time before a local user is logged out (0=never).	20 minutes
2	VT Logout Time	Idle time before a virtual terminal user is logged out.	4 minutes
3	Prompt Time	Idle time before a parameter prompt times out.	2 minutes
4	Command Time	Idle time before a continuous command times out.	3 minutes
5	UID Privilege Level	Privilege level of User ID allowed to use control terminal. The default is 6, the lowest user level.	6
6	Input Char Echo	If enabled, characters are echoed as you type them.	enabled
7	Screen Update Time	Time between screen updates.	2 seconds

Figure 1-64 cnfuiparm—Configure User Interface Parameters

```
sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  04:01 GMT

1. Logout Time ........... 999 minutes
2. VT Logout Time ........ 4 minutes
3. Prompt Time ........... 60 seconds
4. Command Time .......... 3 minutes
5. UID Privilege Level ... 6
6. Input Character Echo .. Enabled
7. Screen Update Time .... 10 seconds






This Command: cnfuiparm


Enter parameter index:
```

cnfuvmchparm (Configure Channel Parameters on a UVM)

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 1-47 for an explanation of the preceding UVM channel parameters.

Full Name

Configure UVM channel parameters

Syntax

cnfuvmchparm <channel(s)> <value>

Related Commands

none

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX	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 8420    9.2 Aug. 26 1998 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 1-47 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. The PIU performs a resampling and injects noise in case of lost packets. The range is 1–15 (which is a multiplier for -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.

cnfvchparm (Configure Voice Channel Parameter)

The **cnfvchparm** command modifies CVM or CVM voice channel parameters.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX	Yes

Associated Commands

cnfcvmparm, **dspchan**

Syntax

cnfvchparm <*channel(s)*> <*parameters*>

channel(s)	Specifies the voice channel number(s) to configure.
parameters	Specifies values for the voice parameters.

Function

The **cnfvchparm** command specifies voice card parameters for:

- Voice Activity Detection (VAD)
- Background noise injection
- VF channel loss
- Echo suppression
- Modem detection

Table 1-48 lists the voice parameters you can specify with **cnfvchparm**. Table 1-49 lists some calculated examples for a *sample delay* for VAD and non-VAD connections.

Different versions of firmware for the CVM present different ways of specifying the level of background noise you can select to cover awkward periods of silence at the ends of voice connections. For cards with Model A firmware, you specify the actual level in dBm (deciBels) or dBrnC0. For Model A cards, you can specify the noise levels with a granularity of 0.1 dBm or dBrnC0. For cards with Model B firmware, you enter a number that maps to a noise level. Table 1-50 lists the numbers that correspond to the levels of injected background noise for Model B firmware.

The screen displays in Example 1 and Example 2 illustrate **cnfvchparm** applied to a Model A CDP and a Model B CDP, respectively. The display for Model A cards shows the decibel level of the injected noise. The display for the Model B shows the number that corresponds to a decibel (or dBrnC0) level of background noise.

After you enter **cnfvchparm**, the system displays “Enter channel(s).” After you enter the parameters, the system requests confirmation by displaying “Reconfigure active CDP channels? (y/n).”

Without the **cnfvchparm** command, the other ways to reconfigure channels are

- By switching cards
- By deleting then re-adding connections

Table 1-48 VF Channel Parameters

Parameter	Description	Default
Sample delay for VAD connections	Adds processing to speech information to prevent front-end clipping due to speech detector latency. One increment is 125 micro seconds. See Table 1-49.	A8 (H)
Sample delay for non-VAD connections	Same for non-VAD circuits.	01 (H)
Background Noise	Sets the level of background noise the far-end card adds to the connection while it receives no voice packets. For Model A firmware, specify levels in actual decibels in 0.1 dB increments. For Model B firmware, see Table 1-49.	2 (H)
High Pass Filter mode	Enables/disables high-pass filter to assist in VAD and modem detect.	enabled
Floating Priority mode	When enabled, sets higher priority for modem detection on "c" and "v" channels. Effectively changes the trunk queue for the channel.	enabled
V.25 modem detect mode	Enables/disables V.25 modem-detect mode. The default is enabled with "detect-64K," which specifies that a 2100 Hz tone indicates the presence of V.25-type modem. The options with V.25 modem detect are "disable," "32" for 32K upgrade, and "64" for 64K upgrade. Enter "32" for fax transmission at 32 Kbps FAX Optimized ADPCM. Use the default "64" for fax transmission at 64 Kbps PCM.	enabled
32K	Auto-upgrade line to 32 Kbps ADPCM when a 32K modem is detected.	disabled
64K	Automatically upgrade line to 64 Kbps clear channel PCM when a high-speed modem is detected.	enabled

Table 1-49 Sample Delay Parameters

Delay for VAD and Non-VAD	Delay
01	0.125 msec.
50	10 msec.
A8	21 msec.

Table 1-50 Injected Noise Levels for Model B

Parameter 3	Injected Noise Level
00	Dynamically set noise level to match the noise detected at the other end. Requires Model B firmware on the CDP or CVM.
0	0 dBrnC0 or –90 dBm
1	18 dBrnC0 or –70 dBm
2	21 dBrnC0 or –67 dBm

Table 1-50 Injected Noise Levels for Model B (continued)

Parameter 3	Injected Noise Level
3	23 dBrnC0 or –65 dBm
4	25 dBrnC0 or –63 dBm
5	27 dBrnC0 or –61 dBm
6	30 dBrnC0 or –58 dBm
7	49 dBrnC0 or –39 dBm

Example 1 cnfvchparm for Model A

```
sw110          TN    SuperUser       IGX 8420    9.2 Aug. 6 1998  17:43 PDT

CDP Models All                               None              All
UVM Models All                               None              All
           Sample Delay  Bkgnd               Echo Suppression  V.25    Xmit
From 14.1  VAD  Non-VAD  Noise  HPF  Float   Function    Loss  Detect  Delay
14.1-15    A8   01       67     ON   ON      ON          ON    64K     5
14.17-24   A8   01       67     ON   ON      ON          ON    64K     5










This Command: cnfvchparm 14.1-6 A8 1 67 e e e e


V.25 Modem detect, 'd' - disable, '32' - 32K upgrade, '64' - 64K upgrade:
```

Example 2 cnfvchparm for Model B

```
sw83 TN    SuperUser       IGX 8420    9.2      Aug. 1 1998  17:01 PST
CDP Models All                                  None              All
              Sample Delay   Bkgnd              Echo Suppression  V.25    Xmit
From 11.1     VAD  Non-VAD  Noise  HPF  Float   Function   Loss   Detect  Delay
11.1-15       A8   01       2      ON   ON      ON         ON     ON      5
11.17-31      A8   01       2      ON   ON      ON         ON     ON      5









This Command: cnfvchparm


Next Command:
```

dchst (Display Channel Status)

The **dchst** command displays CDP or CVM card parameters.

Attributes

Jobs	Log	Node	Lock
No	No	IGX	Yes

Associated Commands

cnfcdpparm

Syntax

dchst <channel> [interval]

<channel(s)>	Specifies the voice channel number(s) to configure.
<interval>	Specifies the refresh time for the data (1–60 sec.).

Function

This command displays state information for a CDP or CVM channel used for a specific connection. The interval parameter specifies the refresh time for the data. It defaults to 5 seconds. The Transmit and Receive dBm0 for both CDP or CVM indicate the input (toward the circuit line) and output power (from the circuit line) levels for the channel. Modem state indicates whether modem–detect is on or off.

Table 1-51 lists the parameters for the CDP or CVM card. Figure 1-65 illustrates the system display for a CDP or CVM.

Table 1-51 Display Channel Status Parameters for CDP or CVM

Register	Byte	Parameter	Description
0	high low	zcr total signal state mem	Zero Crossing Total Signal State Memory
1	high low	hpf z1 hi-hi hpf z1 hi-lo	High-Pass Filter High-Pass Filter
2	high low	sam - hi sam - lo	Encoded Voice Sample Encoded Voice Sample
3	high low	vad state-hi vad state-lo	Voice Activity Detector state Voice Activity Detector state
4	high low	sil cnt mad signal state	Silent Count Modem Activity Detector Signal State
5	high low	mad wnd cnt mad fail cnt	Modem Activity Detector Wnd. Count Modem Activity Detector Fail Count
6	high low	mad state-hi mad state-lo	Modem Activity Detector state Modem Activity Detector state

Figure 1-65 dchst—Display Channel Status

```
alpha            TRM       SuperUser        Rev: 9.2  Aug. 14 1998 16:30 PST

CDP state display for channel 11.1                                   Snapshot

Transmit dBm0:
Receive dBm0:

Register 0  =
Register 1  =
Register 2  =
Register 3  =
Register 4  =
Register 5  =
Register 6  =



Last Command: dchst 11.1


Next Command:
```

diagbus (Diagnose Failed Bus)

The **diagbus** command is used to diagnose a failed IGX Muxbus or IGX cell bus.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

none

Syntax

diagbus

Function

This command runs detailed diagnostics to isolate Muxbus problems to a failed card or bus. It is used when a minor alarm is indicated and displaying the alarm (**dspalms**) screen indicates the message “bus needs diagnosis.”

This command can only be run locally with a terminal connected directly to the Control port or remotely from a modem connection. It can not be executed through a virtual terminal (VT) command or when the node's Control port is configured for Cisco WAN Manager mode.

Caution This command may cause a major disruption in service on all lines and connections and only should be run at a time when this can be tolerated. It should not be performed except as a last resort.

To fully isolate the failure may require manual removal of cards, including controller cards and so forth. For this reason, the command may not be executed over a Virtual Terminal connection.

If the test is successful, and no problems found, the system displays:

Both buses are OK

Otherwise, the system displays various messages to the operator for additional steps to perform in isolating the problem. These messages depend on the results of the diagnostics testing.

drtop (Display Route Op Table)

The **drtop** command displays the routing table from the local node to each connected remote node.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

dsptrkcons

Syntax

drtop

Function

The **drtop** command displays the routing table from the local node to each remote node to which it connects. It shows how NPM/B.C. traffic is routed to other nodes in the network. Use **drtop** to find which trunks are used to send control cells/packets to other nodes.

The display includes remote node name, number of hops to the remote node, the trunk(s) used, and number of satellite hops if any, and the number of unused DS0s (open space), if any, on the route. Figure 1-66 illustrates the display.

Figure 1-66 drtop—Display Route Op Table

```
pubsipx2       VT    SuperUser       IGX 8430    9.2      Aug. 2 1998  02:27 GMT

Node Number   Node Name     Hops To  Via Trk  SAT Hops  No HP Hops  Open Space
1             npubsbpx1      2       6         0         0           3
2             npubsigx1      3       6         0         0           3
3             npubsigx2      0       0         0         0           0
5             npubsigx1      1       6         0         0           24
7             npubsigx3      2       6         0         0           24





Last Command: drtop


Next Command:
```

dspabortlog (display abort log)

Displays the abort errors log. The log contains up to six entries, and when the log is full, additional aborts overwrite the oldest entries. This command is new to the command line interface, but the following changes have been added in the 9.3.0 release:

- Log only contains fatal entries. The existing log for software errors now contains only non-fatal entries (**dspswlog**).
- A lighted icon “AB” at the bottom of the command line interface indicates that a software abort has been logged. Not related to the command, but also displayed at the bottom of the command line interface, the “CD” icon indicates a card or hardware error, and the “SW” icon indicates a software error.

SW AB CD Job 1

Syntax

dspabortlog [<d> | <number> | <c>]

d	Displays the detailed version of the log, including stack dumps. Page through the detailed version of the log using the arrow keys or the Return key.
number	When an entry number is entered (found under the **No.** column), displays the detailed version of a specific entry in the log.
c	Clears the log. Optionally, you can use the **clrabortlog** command.

Related Commands

clrswlog, **dspswlog**, **clrabortlog**

Attributes

Privilege	Jobs	Log	Node	Lock
Service	No	No	IGX, BPX	No

Example 1

dspabortlog 1

Description

Displays a detailed log for abort number 1. See Table 1-52 for an explanation of the fields displayed.

System Response

```
sw150          TRM   StrataCom       IGX 8420  9.3.0L    Feb. 2 2000  12:35 GMT

Active Control Card's Software Log
No.  Type    Number      Data(Hex)  PC(Hex)    PROC   SwRev   Date     Time
 1.  Abort   1000001     00000000   301EAED2   TN_2   9.3.0L 02/02/00 11:09:12

SSP 306B1310 10 00 30 28 F8 C2 70 08  30 6B 06 40 00 81 00 81  ..0(..p.0k.@....
SSP 306B1320 00 01 00 81 30 53 55 E8  30 6B 06 6C 00 00 00 0C  ....0SU.0k.l....
USP 306B066C 00 00 00 00 00 00 00 01  00 00 00 04 31 5A B7 7C  ............1Z.|
USP 306B067C 30 53 D6 F8 31 5A DE 28  00 00 02 40 30 53 D6 F8  0S..1Z.(...@0S..
USP 306B068C 00 00 00 4F 30 52 1A 56  00 00 00 01 00 00 00 01  ...O0R.V........
USP 306B069C 30 6B 07 34 30 52 46 50  00 00 00 01 31 5A D1 64  0k.40RFP....1Z.d
USP 306B06AC 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
USP 306B06BC 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
USP 306B06CC 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00  ................
USP 306B06DC 00 0D 00 00 00 00 00 00  31 5A B7 7C 00 00 00 01  ........1Z.|....


Last Command: dspabortlog 1
```

Table 1-52 dspabortlog—Field Descriptions

Field	Description
No.	Abort entries in the table, numbered from 1–12.
Type Error	The entry identifier. For the **dspabortlog** command, the identifier is “abort.” Occasionally, the identifier “BadType,” is displayed, indicating a problem within the table itself.
Number	The number that identifies a specific abort problem.
Data (Hex)	A 4-byte field containing information that may be useful in solving a problem. It is different for every abort number.
PC (Hex)	Program Counter. The address of the place in memory where the software was running when the abort was logged; this identifies where the problem was detected.
PROC	Process or Task. This field indicates which process was running when the problem occurred. In the above example, TN_2 is the second Telnet user task. Use the **dspprf** command to display all of the tasks.
SwRev	Switch software version operating on this node.
Date	Date of the abort.
Time	Time of the abort.

dspasich (Display ASI Channel Routing Entry)

The **dspasich** command displays the ATM channel routing entries for an ASI card.

Attributes

Jobs	Log	Node	Lock
No	No	BPX	Yes

Associated Commands

None

Syntax

dspasich <line> <channel>

<line>	Specifies the line in the format *slot.port*.
<channel>	Specifies the channel in the format *vpi.vci*.

Function

This command displays the routing entries for an ASI card shown in Figure 1-67.

Figure 1-67 dspasich—Display ASI Channel Routing Entry

```
pubsbpx1       VT    SuperUser       BPX 15    9.2       May  24 1998 21:09 GMT
ASI Channel Configuration Query & Display

Slot.port.lcn:5.1.1
Status:       Added        BF hdr: 4145 9002 8012 0501 8640 0000 2DEB
[00] BF tp:   4      [11] VCI:   00000064 [22] UPC CDV: 0      [33] FST up:  0
[01] Pri SDA: 5      [12] Con tp:  VC     [23] UPC CIR: 500    [34] FST dn:  0
[02] Dst Prt: 1      [13] Rmt tp:  ASI    [24] UPC CBS: 1000   [35] FST fdn: 0
[03] Dst lcn: 2      [14] Srv tp:  VBR    [25] UPC IBS: 0      [36] FST rmx: 0
[04] BCF tp:  0      [15] Gen AIS: N      [26] UPC MFS: 200    [37] Q max:64000
[05] Qbin#:   12     [16] Mcst:    0      [27] CLP enb: Y      [38] EFCI: 100
[06] BF VPI:  64     [17] Mc grp:  1      [28] FST enb: N      [39] CLP hi: 100
[07] BF VCI:  0      [18] & msk: 0000000F [29] FST MIR: 500    [40] CLP lo: 100
[08] Pl Cls:  0      [19] | msk: 06400640 [30] FST PIR: 500    [41] BCM:    N
[09] Rmt lp:  N      [20] Prt QBN: 2      [31] FST QIR: 500    [42] Inhibit:N
[10] VPI:   00000064 [21] UPC GCR: 0      [32] QIR TO:  0      [43] UPC enb:Y


Last Command: dspasich 5.1 1 N

Next Command:
```

dspbuses (Display Bus Status)

Displays the available Muxbus or cell bus bandwidth. The display does not dynamically receive updates and is therefore a snapshot. The **dspbuses** command lists the dedicated and pooled bandwidth units as well as the status of the available Muxbus.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

cnfbus

Syntax

dspbuses

Function

This command displays the available Muxbus bandwidth. The display is not updated and is referred to as a snapshot. The command lists the dedicated and pooled bandwidth units as well as the status of the available Muxbus or cell bus. Figure 1-68 illustrates the **dspbuses** display on a BPX node. Figure 1-69 illustrates the **dspbuses** display on an IGX node.

Figure 1-68 dspbuses on a BPX Switch

```
bpx1       TN    SuperUser       BPX 15    9.2 July 2 1998  13:22 GMT

                              Bus Status


Bus A (slot 7): Active - OK

Bus B (slot 8): Standby - OK







Last Command: dspbuses


Next Command:
```

Figure 1-69 dspbuses on an IGX Switch

```
sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  04:10 GMT

                                Bus Info

Bus Bandwidth usage in Fastpackets/second   (Snapshot)

    Allocated = 86000      ( 8%)

    Available = 1082000    (92%)



-----------
Bus A: Active - OK
Bus B: Standby - OK


Last Command: dspbuses


Next Command:
```

dspcardstats (Display BXM Card Statistics)

The **dspcardstats** command displays the collected BXM card statistics for the selected node slot.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	BPX	Yes

Associated Commands

cnfslotstats

Syntax

dspcardstats <slot number>

<slot number>	Specifies the shelf and slot.

Function

This command displays all card statistics for an active BXM card in the current node. Figure 1-70 illustrates a screen display after entering the **dspcardstats** command.

Figure 1-70 dspcardstats—Display BXM Card Statistics

```
sw59           TN    SuperUser       BPX 15    9.2 Date/Time Not Set
ASI-T3 12       Status: Clear - Slot OK                 Clrd: Date/Time Not Set
Type       Count ETS   Status    Type
utopia-2 discard count        0     0
utopia-2 misalign count       0     0
atm fr. pyld parity err     0      0
bfr hdr parity err     0     0
null bfrm header err     0     0
brame hoq req t/o     0     0
poll bus parity err     0     0
bfr queue parity err     0     0
bfr bip16 parity err     0     0
mc addr tbl parity err     0     0
eap arfd pndg err     0     0

This Command: dspcardstats 12
Continue?
```

BXM Card Statistics Descriptions for dspcardstats Command

Table 1-53 lists some BXM card statistics names and descriptions for the **dspcardstats** command. The table gives the objects that the BXM firmware sends to the switch software. Note that in most cases the object name and screen field name are similar or identical; however, descriptions may vary from the field names as they appear on the **dspcardstats** screen.

Table 1-53 Descriptions for Statistics for BXM Card on dspcardstats Screen

Object ID	Object Name	Range/Values	Default	Description
01	Message Tag	Byte 0-3: Tag ID Byte 4-7: IP Address	0	Identifier and source IP address sent with CommBus message. Both will be copied into the response, if any is to be sent.
02	Auto-Reset Option	0 - Disable 1 - Enable	1	Controls whether the statistics read should be automatically reset to 0.
03	Poll-Bus A Parity Errors	0 - 2^{32}-1	NA	Includes both Poll-Bus A & B Parity Errors from SIMBA.
04-05	RESERVED			
06	Tx BIP-16 Errors	0 - 2^{32}-1	NA	Count of 100 msec intervals during which BXM BFrame Queue Parity errors existed.
07	RESERVED			
08	SBUS BFrame BIP-16 Errors	0 - 2^{32}-1	NA	Count of 100 msec intervals during which BFrame (non-header) BIP-16 errors existed.
09	SBUS BFrame Parity Errors	0 - 2^{32}-1	NA	Count of 100 msec intervals during which BFrame Header BIP-16 errors existed.
0A	RESERVED			
0B	SIU Phase Errors	0 - 2^{32}-1	NA	Count of 100 msec intervals during which SIU Clock Failures or Phase Margin errors existed.
0C	Standby PRBS Errors	0 - 2^{32}-1	NA	Count of 100 msec intervals during which SIU Rx errors existed.
0D-12	RESERVED			
13	Poll Clock Error Count	0 - 2^{32}-1	NA	Count of 100 msec intervals during which latched poll clock failures existed.
14	RESERVED			
15	Monarch-Specific Total Error Count	0 - 2^{32}-1	NA	Any time there is a Monarch-Specific Error occurrence (i.e., any of the errors listed in the following group of Object IDs) this counter is incremented. Hence, the software can just get this object to see if any errors have happened. If the counter is 0, then there is no need for S/W to fetch the remaining objects. If it is non-zero, then the remaining objects should be fetched to determine which error it is.
16	Utopia-2 discard error	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed.
17	Utopia-2 Misalign error	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed.
18	ATM Fr. Pyld Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This is the ATM Frame Payload Parity error.
19	ATM Fr. hdr Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This is the ATM Frame Payload Parity error.

Table 1-53 Descriptions for Statistics for BXM Card on dspcardstats Screen (continued)

Object ID	Object Name	Range/Values	Default	Description
1A	BFr. Hdr. Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This error is the BFrame Header Parity error (half-word PE using MSB as the check bit).
1B	Null BFrm Header Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This error indicates that a null BFrame header was accessed.
1C	BFrame HOQ Req T/O	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This is the BFrame HOQ Request Time-out error.
1D	Poll Bus Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This is a generic poll-bus parity error.
1E	BFr. Queue Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed.
1F	BFr. BIP16 Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This error is the BFrame BIP-16 parity error as detected by SIMBA.
20	BFr Hdr. BIP16 Prty Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This error indicates that there was a BFrame header BIP-16 Parity error.
21	MC Addr Tbl Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This error indicates that there was a Multicast Address Table Parity error.
22	EAP ARFD Pndg. Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that SIMBA detected an EAP Alternate Reg File Data Pending error.
23	EAP PRFD Pndg. Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that SIMBA detected an EAP Primary Reg File Data Pending error.
24	ECOE RFBD Pndg. Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that SIMBA detected an ECOE Reg File B Data Pending error.
25	ECOE RFAD Pndg. Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that SIMBA detected an ECOE Reg File A Data pending error.
26	MCE Q Data Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that SIMBA detected an MCE Queue Data Parity error.
27	MCE Q Hdr Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that SIMBA detected an MCE Queue Header Parity error.
28	MC Rec. Tbl Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed.
29	Cell Mem Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that a Cell Memory Parity Error was detected.

Table 1-53 Descriptions for Statistics for BXM Card on dspcardstats Screen (continued)

Object ID	Object Name	Range/Values	Default	Description
2A	VC T/S Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected VC T/S Addr/Config errors.
2B	Rx A Hdr Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx A Header Parity errors.
2C	Rx A Payld Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx A Payload Parity errors.
2D	Rx A SOC OOS Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx A SOC out-of-sync errors.
2E	Rx A Disc Ctr Events	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx A Discard Counter errors.
2F	Rx B Hdr Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx B Header Parity errors.
30	Rx B Payld Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx B Payload Parity errors.
31	Rx B SOC OOS Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx B SOC out-of-sync errors.
32	Rx B Disc Ctr Events	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx B Discard Counter errors.
33	Rx C Hdr Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx C Header Parity errors.
34	Rx C Payld Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx C Payload Parity errors.
35	Rx C SOC OOS Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx C SOC out-of-sync errors.
36	Rx C Disc Ctr Events	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Rx C Discard Counter errors.
37	Cell Mem Hdr PE	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Cell Memory Header Parity errors.

Table 1-53 Descriptions for Statistics for BXM Card on dspcardstats Screen (continued)

Object ID	Object Name	Range/Values	Default	Description
38	Cell Mem Pyld PE	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the QE has detected Cell Memory Payload Parity errors.
39	FRMCP Alt. IF Crc Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected FRMCP Alternate IF CRC errors.
3A	FRMCP Pri. IF Crc Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected FRMCP Primary IF CRC errors.
3B	BRMCP Pri IF CRC Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected BRMCP Primary IF CRC errors.
3C	BRMCP Alt IF CRC Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected BRMCP Alternate IF CRC errors.
3D	OAMCP Pri. CRC Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected OAMCP Primary IF CRC errors.
3E	OAMCP Alt. CRC Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected OAMCP Alternate IF CRC errors.
3F	OAMCP Cell Fltr Parity Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected OAMCP Cell Filter Parity errors.
40	ERP Exp. Rate BIP Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected ERP Explicit Rate BIP errors.
41	ERP LCN BIP Parity Errors	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected ERP LCN BIP Parity errors.
42	ERP Missing Exp. Rte Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected ERP Message Explicit Rate errors.
43	Rx Pri. IF Hdr PEs	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected Rx Primary I/F Header Parity errors.
44	Rx Pri. IF Pyld Errors	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected Rx Primary I/F Payload Parity errors.
45	Rx Pri IF SOC OOS Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected Rx Primary I/F SOC out-of-sync errors.

Table 1-53 Descriptions for Statistics for BXM Card on dspcardstats Screen (continued)

Object ID	Object Name	Range/Values	Default	Description
46	Rx Pri. IF Disc Ctr Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected Rx Primary I/F Discard Counter errors.
47	Rx Alt. IF Hdr PEs	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected Rx Alternate I/F Header Parity errors.
48	Rx Alt. IF Pyld Errors	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected Rx Alternate I/F Payload Parity errors.
49	Rx Alt IF SOC OOS Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected Rx Alternate I/F SOC out-of-sync errors.
4A	Rx Alt. IF Disc Ctr Err	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected Rx Alternate I/F Discard Counter errors.
4B	SDC Sch RAM PEs	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected SDC External Schedule RAM Parity errors.
4C	VCSD ICG LUT PEs	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected VCSD ICG LUT Parity errors.
4D	RRC Ext Rate RAM PE	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected RRC External Rate RAM Parity errors.
4E	VCSA QE Sts Bus PE	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SABRE has detected VCSA Status Bus Parity errors.
4F	PRB Sec Req Sent Cnt	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SIMBA has detected Sec Req Send errors.
50	PRB Sec Req Acpt Cnt	0 - 2^{32}-1	NA	Count of 100 msec intervals during which this error existed. This indicates that the SIMBA has detected Sec Req Accept errors.

dspcderrs (Display Card Errors)

The **dspcderrs** command displays detailed card failure information resulting from card diagnostics testing at the local node.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

clrcderrs, **prtcderrs**

Syntax

dspcderrs [<slot>]

[<slot>]	Specifies the shelf slot in the local node.

Function

This command displays a history of card failures associated with a specified slot. If no argument is specified, a summary is displayed, indicating which slots have failures recorded against them. The command displays the results of the self-tests and background tests as well as the total hardware errors.

To clear the card error counters, use the **clrcderrs** command. To obtain a hard copy of the report, use the **prtcderrs** command. Figure 1-71 illustrates the command display.

Figure 1-71 dspcderrs—Display Card Errors

```
sw83           TN    SuperUser       IGX 8420    9.2      Aug. 1 1998  17:56 PST

AIT in Slot 11 : 176767 Rev AEF     Failures Cleared: Aug. 19 1998 11:25:29 PST
----------------------------------- Records Cleared:  Aug. 20 1998 13:14:03 PST
Self Test          Threshold Counter: 0          Threshold Limit: 300
Total Pass: 0             Total Fail: 0             Total Abort: 0
First Pass:                           Last Pass:
First Fail:                           Last Fail:

Hardware Error     Total Events: 0     Threshold Counter: 0
First Event:                          Last Event:




Last Command: dspcderrs 11


Next Command:
```

dspcftst (Display Communication Fail Test Pattern)

The **dspcftst** command displays the test pattern used for the communications fail test.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

cnfcftst

Syntax

dspcftst

Function

This command displays the test pattern used to test the controller communication path to a node that does not respond to normal controller traffic. The test pattern defaults to an alternating 8-byte sequence of 00 and FF. Refer to **cnfcftst** command for other patterns and how to reconfigure this pattern. Figure 1-72 illustrates the command display.

Figure 1-72 dspcftst—Display Communication Fail Test Pattern

```
sw83           TN    SuperUser       IGX 8420    9.2      Aug. 1 1998  17:57 PST


Comm Fail Test Pattern.

    Byte  0: FF     Byte 12: 00     Byte 24: FF     Byte 36: 00     Byte 48: FF
    Byte  1: FF     Byte 13: 00     Byte 25: FF     Byte 37: 00     Byte 49: FF
    Byte  2: FF     Byte 14: 00     Byte 26: FF     Byte 38: 00     Byte 50: FF
    Byte  3: FF     Byte 15: 00     Byte 27: FF     Byte 39: 00     Byte 51: FF
    Byte  4: 00     Byte 16: FF     Byte 28: 00     Byte 40: FF     Byte 52: 00
    Byte  5: 00     Byte 17: FF     Byte 29: 00     Byte 41: FF     Byte 53: 00
    Byte  6: 00     Byte 18: FF     Byte 30: 00     Byte 42: FF     Byte 54: 00
    Byte  7: 00     Byte 19: FF     Byte 31: 00     Byte 43: FF     Byte 55: 00
    Byte  8: FF     Byte 20: 00     Byte 32: FF     Byte 44: 00     Byte 56: FF
    Byte  9: FF     Byte 21: 00     Byte 33: FF     Byte 45: 00     Byte 57: FF
    Byte 10: FF     Byte 22: 00     Byte 34: FF     Byte 46: 00     Byte 58: FF
    Byte 11: FF     Byte 23: 00     Byte 35: FF     Byte 47: 00     Byte 59: FF


Last Command: dspcftst


Next Command:
```

dspchan (Display Channel Configuration)

The **dspchan** command displays the configuration of various IGX voice channels.

Attributes

Jobs	Log	Node	Lock
No	No	IGX	No

Associated Commands

cnfcdpparm

Syntax

dspchan <channel>

<channel>	Specifies the voice channel connection to display.

Function

This command displays the configuration of IGX voice channels. It is primarily a debug command and allows you to inspect the data structure defining a channel. Parameters for voice and signaling processing on a CVM voice channel are displayed by this command. Table 1-54 lists the parameters. Many of these parameters are also displayed elsewhere. Figure 1-73 illustrates the command display.

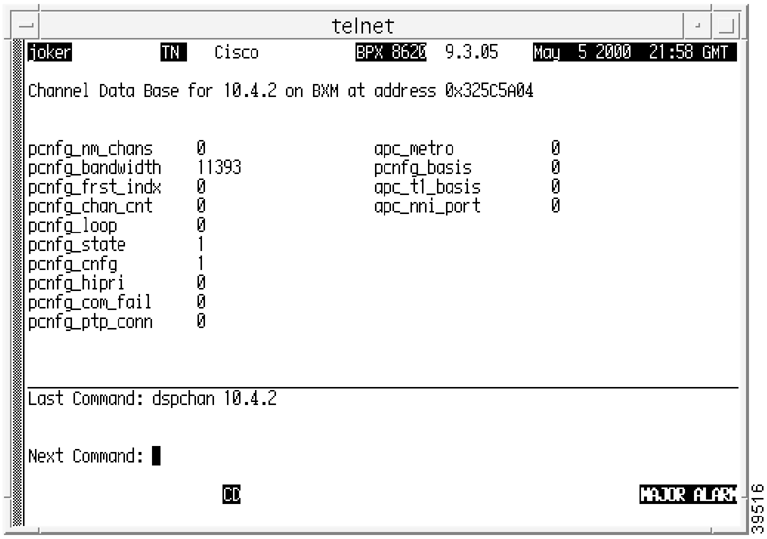
Table 1-54 Parameters Configurable on a CVM Voice Channel

Parameter	Parameter	Parameter	Parameter
VC Index	Dial Type	TX Sig	iec converge.
In Loss	TX A–D bit	RX Sig	Hi Pass F
Out Loss	RX A–D bit	Clr Chn	es loss
Chan Type	signaling	Sig Rate	Fmodem
Sig. Intg	Echo supr	PLY MSBhx	ADV
Xmt. dlay	Wink Puls	PLY LSBhx	Cond ID
Smpl dlay	TX A–D Qual	In use	iec erl lvl
Bk noise	RX A–D Qual	DPU	iec Hregs.
DSI smple	TX Code	iec cancel	iec tone dsbl
Chan Util	RX Code	iec nlp	adpcm flag
Onhk A–D			

Figure 1-73 dspchan—Display Channel (CDP card)

```
sw83           TN    SuperUser       IGX 8420    9.2     Aug. 1 1998  18:06 PST

Channel Data Base for CDP card  7  chan. 000000 at address 30BF29EC

VC Index      -1                 Onhk C         4
In Loss       0                  Onhk D         4
Out Loss      0                  Dial Type      0
Chan Type     1                  TX A bit       1
Sig. Intg     96                 TX B bit       1
Xmt. dlay     5                  TX C bit       0
Smpl dlay     1                  TX D bit       1
Bk noise      67                 RX A bit       1
DSI smple     168                RX B bit       1
Chan Util     40                 RX C bit       0
Onhk A        3                  RX D bit       1
Onhk B        3                  Signalling     TSP MODE

This Command: dspchan 7.1


Continue?


sw83           TN    SuperUser       IGX 8420    9.2     Aug. 1 1998  18:07 PST

Channel Data Base for CDP card  7  chan. 000000 at address 30BF29EC

TX CODE       3                  iec cancel     0
RX CODE       3                  iec nlp        1
TX SIG        0                  iec converg.   1
RX SIG        0                  iec erl lvl    1
CLR CHN       0                  iec Hregs.     1
SIG RATE      0                  iec tone dsbl  1
PLY MSBhx     1                  adpcm flag     0
PLY LSBhx     90
In use        0
DPU           -

Last Command: dspchan 7.1


Next Command:
```

Figure 1-74 dspchan—Display Channel (BXM card)



dspchstatcnf (Display Statistics Enabled for a Channel)

The **dspchstatcnf** command displays the configuration of enabled statistics for a channel.

You use the **cnfcdparm** command to configure the channel statistics level (level 1, 2, or 3) on BXM and UXM cards.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfchstats, **dspchstathist**, **cnfcdparm**

Syntax

dspchstatcnf <channel>

<channel>	Specifies the channel whose statistics configuration you want to display.

Function

The **dspchstatcnf** command displays the enabled interval statistics for a channel. It is intended to help debug problems with statistics gathering. The command output is a list of the connection statistics as set by the **cnfchstats** command, by Cisco WAN Manager, or by IGX features. Figure 1-75 illustrates a typical example.

The Owner column identifies who or what set the statistic. If the Owner column shows “Automatic,” the node’s features set the statistic. If the node name appears under Owner, Cisco WAN Manager set the statistic. If the user name appears under Owner, the **cnfchstats** command executed from the command line interface set the statistic.

Figure 1-75 dspchstatcnf—Display Channel Statistics Enabled (FR channel)

```
pubsbpx1       VT    SuperUser       BPX 15    9.2       May  24 1998 23:13 GMT
Statistics Enabled on Channel 5.1.100.100

    Statistic                            Samples Interval Size Peaks  Owner
    ------------------------------------ ------- -------- ---- -----  ----------
41) AAL5 Cells Discarded for VCQ Full         1       30    4  NONE  TFTP
42) Average VCq Depth in Cells                1       30    4  NONE  TFTP
43) Cells lost due to Rsrc Overflow           1       30    4  NONE  TFTP
44) Cells discarded for SBIN full             1       30    4  NONE  TFTP
45) Cells Transmitted with EFCI(Port)         1       30    4  NONE  TFTP
46) Cells Transmitted(Port)                   1       30    4  NONE  TFTP
47) Cells Received from Network               1       30    4  NONE  TFTP
48) Cells discarded for QBIN full             1       30    4  NONE  TFTP
49) Cells discarded when QBIN>CLP             1       30    4  NONE  TFTP
50) Cells Transmitted with CLP (Port)         1       30    4  NONE  TFTP
51) BCM Cells Received(Port)                  1       30    4  NONE  TFTP

This Command: dspchstatcnf 5.1.100.100


Continue?
```

dspchstathist (Display Statistics History for a Channel)

The **dspchstathist** command displays a history of statistics configured as enabled for a channel.

You can use the **cnfdparm** command to configure the channel statistics level on the BXM and UXM cards.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnfchstats, **cnfchlevel**, **dspchstatcnf**

Syntax

dspchstathist <channel> <stat> <owner> <interval>

<channel>	Specifies the channel.
<stat>	Specifies the number of the statistic to view.
<owner>	Specifies the source of the selected statistics's original configuration (the choices are "auto," "user," and "tftp").
<interval>	Specifies the time period of statistics collection to display.

Function

This command displays a history of the enabled statistics for a selected channel. It is intended for debugging problems with statistics gathering. It displays the data for the number of samples specified in the configuration of the channel statistic. You select a statistic from the list in the **dspchstathist** display. Specify only an enabled statistic.

Use the **dspchstatcnf** command to display the statistics enabled on the selected channel. Record the statistics types enabled, the collection interval, and owner; you will need this information to obtain the statistics history. Use **cnfchstats** to enable a statistic if it is not already enabled. Figure 1-76 illustrates a display for channel 6.1 packets transmitted (1 second interval) history.

Note You may have to enter owner "auto" in all capital letters.

Figure 1-76 dspchstathist—Display Channel Statistics History

```
gamma            TRM       SuperUser        Rev:  9.2  Aug. 14 1998 13:53 PDT

Packets Transmitted on Channel 6.1
Interval: 1 Minute(s), Data Size: 4 Byte(s), NO Peaks, Owner: Automatic

0   -       1699
-1   -       1698
-2   -       1698
-3   -       1699
-4   -       1698
-5   -       1698
-6   -       1698
-7   -       1699
-8   -       1697
-9   -       1699



Last Command: dspchstathist 6.1 7 1 AUTO


Next Command:
```

dspchstats (Display All Enabled Statistics for a Channel)

Use the **dspchstats** command to display all statistics configured as enabled for a selected channel. (This is referred to as a “summary statistics” command.)

For descriptions of **dspchstats** fields for the BXM card, refer to Table 1-49. Note that the object names given in the table may not match what appears on the screen. Similarly, the descriptions given may vary in some cases for actual behavior for a particular **dspchstats** statistic. (Field names will be provided in the FCS release of this document.)

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnfchstats, **dspchstatcnf**

Syntax

dspchstats <channel> [interval]

<channel>	Specifies the channel defined according to the channel type (*slot.port.vpi.vci*, *slot.port.DLCI*, or *slot.port* for ATM, Frame Relay, or voice or data, respectively).
<interval>	Specifies the time interval of each sample (1–255 minutes).

Function

This command displays the enabled statistics for the selected channel. It is intended for debugging problems with statistics gathering. It displays the data for the last five occurrences of the channel statistic. You select the channel statistic from the list displayed when you first enter the command.

Use the **dspchstats** command to display the statistics enabled on the selected channel. Record the statistics types enabled, the collection interval, and owner—you will need this information to get the statistics history. Use **cnfchstats** to enable a statistic if it is not already enabled. You can use **cnfchlevel** to configure a BXM or UXM card to additional levels of statistics (level 2 and level 3) in addition to level 1 statistics. Figure 1-77 shows a display for channel on a UXM port.

Figure 1-77 dspchstats—Display Channel Statistics

```
sw197          TN    SuperUser       IGX 8420    9.2    Apr. 7 1998  00:20 GMT

Channel Statistics: 5.1.70.100                                         Snapshot
Collection Time: 0 day(s) 00:00:00                    Clrd:  04/04/98 16:47:00
Type                                       Count     Traffic       Rate (cps)
Cells Received from Port                       0   From port              0
Cells Transmitted to Network                   0   To network             0
Cells Received from Network                    0   From network           0
Cells Transmitted to Port                      0   To port                0
EOF Cells Received from Port                   0
Cells Received with CLP=1                      0
Cells Received with CLP=0                      0
Non-Compliant Cells Received                   0
Average Rx VCq Depth in Cells                  0
Average Tx Vcq Depth in Cells                  0
Cells Transmitted with EFCI=1                  0
Cells Transmitted with EFCI=0                  0

Last Command: dspchstats 5.1.70.100

Next Command:
```

Descriptions for Statistics Fields on dspchstats

Table 1-55 gives some descriptions for fields on the **dspchstats** screen.

Note The object name does not necessarily map functionally in all cases to the screen field name, but in most cases provides a description of the function of the field.

Table 1-55 Descriptions for dspchstats Fields for BXM Card

Object ID	Object (Field) Name	Range/Values	Default	Description
01	Message Tag	Byte 0-3: Tag ID Byte 4-7: IP Address	0	Identifier and source IP address sent with CommBus message. Both will be copied into the response, if any is to be sent.
03	LCN	1 - 64K	R	Identifies the channel from which to collect statistics.
05	Rx Cells from Port	0 - 2^{32}-1	N/A	Number of cells received at the ingress of the connection. [A:ALL, B:ALL] (Note: This count is retrieved from the RCMP chip.)
06	Rx EOFs from Port	0 - 2^{32}-1	N/A	Number of EOFs received at the ingress of the connection. [A:ALL, B:12, B:28]
07	Rx Cells to Backplane	0 - 2^{32}-1	N/A	Number of cells received at the ingress that were sent to the backplane. [A:ALL, B:ALL]
08	Rx CLP=1 Cells from Port	0 - 2^{32}-1	N/A	Number of cells received at the port with CLP=1. [A:ALL, B:ALL] (Note: This count is retrieved from the RCMP chip.)
09-0B	RESERVED			

Table 1-55 Descriptions for dspchstats Fields for BXM Card (continued)

Object ID	Object (Field) Name	Range/Values	Default	Description
0C	Rx EFCI=1 Cells from Port	0 - 2^{32}-1	N/A	Number of cells received at the port with EFCI=1. [A:28, B:28]
0D	RESERVED			
0E	Non-Compliant Cell Count (Total)	0 - 2^{32}-1	N/A	Number of cells received at the ingress of the connection that were non-compliant discarded. [A:ALL, B:ALL]. (Note: This is a16-bit counter in the hardware—it can wrap in less than a second depending upon non-compliant rate.)
0F	Non-Compliant Cell Count (CLP 0 Only)	0 - 2^{32}-1	N/A	Number of CLP=0 cells received at the ingress of the connection that were non-compliant dropped. [A:ALL, B:ALL]. (Note: This is a 16-bit counter in the hardware -- it can wrap in less than a second depending upon non-compliant rate.)
10	Non-Compliant Cell Count (CLP 1 Only)	0 - 2^{32}-1	N/A	Number of CLP=1 cells received at the ingress of the connection that were non-compliant dropped. [A:ALL, B:ALL]. (Note: This is a 16-bit counter in the hardware—it can wrap in less than a second depending upon non-compliant rate.)
11	Ingress VC Q Depth	0 - 2^{32}-1	N/A	Current Ingress VC Queue Depth. [A:ALL, B:ALL]
15	Rx Rsrc Ovfl Discards	0 - 2^{32}-1	N/A	Number of cells received at the port that were discarded due to Resource Overflow. [B:ALL]
16-1E	RESERVED			
1F	Tx Cells from Network	0 - 2^{32}-1	N/A	Number of cells received from the backplane. [A:ALL, B:ALL]
20	Tx CLP=1 to Port	0 - 2^{32}-1	N/A	Number of cells transmitted out the port with CLP=1. [A:ALL, B:12, B:28]
21	Tx EFCI=1 to Port	0 - 2^{32}-1	N/A	Number of cells transmitted out the port with EFCI=1. [A:12, A:28, B:12, B:28]
22	Tx Cells to Port	0 - 2^{32}-1	N/A	Number of cells transmitted out the port. [A:ALL, B:ALL]
23-26	RESERVED			
27	Loopback RTD Measurement	0 - 2^{32}-1	N/A	The Loopback Round-Trip Delay measurement in msec. (Still under investigation.) Used to initiate the measurement (Set). The “Get” is used to get the last measurement known; or zero if now known.
28	Local Ingress Rx State	0 : Okay 1 : FERF (aka RDI) 2 : AIS	0	The OAM connection state. [A:ALL, B:ALL]
29	Rx CLP=0 Congested Discards	0 - 2^{32}-1	N/A	Number of CLP=0 cells received from the port and discarded due to congestion (after the policer). [A:ALL, B:None]

Table 1-55 Descriptions for dspchstats Fields for BXM Card (continued)

Object ID	Object (Field) Name	Range/Values	Default	Description
2A	Rx CLP=1 Congested Discards	0 - 2^{32}-1	N/A	Number of CLP=1 cells received from the port and discarded due to congestion (after the policer). [A:ALL, B:None]
2B	Rx CLP=0 Cells from Port	0 - 2^{32}-1	N/A	Number of CLP=0 cells received from the port. [A:ALL, B:ALL] (NOTE: This stat is received from the RCMP.)
2C	Tx CLP=0 Cells to Port	0 - 2^{32}-1	N/A	Number of CLP=0 cells transmitted to the port. [A:ALL, B:12, B:28]
2D	Tx CLP=0 Cells from Backplane	0 - 2^{32}-1	N/A	Number of CLP=0 cells received from the backplane. [A:ALL, B:28]
2E	Rx CLP=0 Cells to Backplane	0 - 2^{32}-1	N/A	Number of CLP=0 cells sent to the backplane. [A:ALL, B:12, B:28]
2F	Tx CLP=1 Cells from Backplane	0 - 2^{32}-1	N/A	Number of CLP=1 cells received from the backplane. [A:ALL, B:28]
30	Rx CLP=1 Cells to Backplane	0 - 2^{32}-1	N/A	Number of CLP=1 cells sent to the backplane. [A:12, A:28, B:12,B:28]
31	Rx EFCI=0 Cells from Port	0 - 2^{32}-1	N/A	Number of EFCI=0 cells received from the port. [A:28, B:28]
32	Tx EFCI=0 Cells to Port	0 - 2^{32}-1	N/A	Number of EFCI=0 cells transmitted to the port. [A:12,A:28, B:12, B:28]
33	Tx EFCI=0 Cells from Backplane	0 - 2^{32}-1	N/A	Number of EFCI=0 cells received from the backplane. [A:28, B:28]
34	Rx EFCI=0 Cells to Backplane	0 - 2^{32}-1	N/A	Number of EFCI=0 cells sent to the backplane. [A:12, A:28, B:12, B:28]
35	Tx EFCI=1 Cells from Backplane	0 - 2^{32}-1	N/A	Number of EFCI=1 cells received from the backplane. [A:28, B:28]
36	Rx EFCI=1 Cells to Backplane	0 - 2^{32}-1	N/A	Number of EFCI=1 cells sent to the backplane. [A:12, A:28, B:12, B:28]
37	Tx EOFs to Port	0 - 2^{32}-1	N/A	Number of cells with EOF sent to the port. [A:12, A:28, B:28]
38	Tx EOFs from Backplane	0 - 2^{32}-1	N/A	Number of EOFs received at the backplane. [B:12, B:28]
39	Rx EOFs to Backplane	0 - 2^{32}-1	N/A	Number of cells with EOF sent to the backplane. [B:28]
3A	Rx Segment OAM	0 - 2^{32}-1	N/A	Number of Segment OAM cells received at the port. [A:28, B:28]
3B	Tx Segment OAM	0 - 2^{32}-1	N/A	Number of Segment OAM cells received at the egress. [A:28, B:28]
3C	Rx End-to-End OAM	0 - 2^{32}-1	N/A	Number of End-to-End OAM cells received at the port. [A:28, B:28]
3D	Tx End-to-End OAM	0 - 2^{32}-1	N/A	Number of End-to-End OAM cells received at the egress. [A:28, B:28]

Table 1-55 Descriptions for dspchstats Fields for BXM Card (continued)

Object ID	Object (Field) Name	Range/Values	Default	Description
3E	Rx Forward RM Cells	0 - 2^{32}-1	N/A	Number of Forward RM cells received at the port. [A:28, B:28]
3F	Tx Forward RM Cells	0 - 2^{32}-1	N/A	Number of Forward RM cells received at the backplane. [A:28, B:28]
40	Rx Backward RM Cells	0 - 2^{32}-1	N/A	Number of Backward RM cells received at the port. [A:28, B:28]
41	Tx Backward RM Cells	0 - 2^{32}-1	N/A	Number of Backward RM cells received at the backplane. [A:28, B:28]
42	Rx Optimized Bandwidth Management RM Cells	0 - 2^{32}-1	N/A	Number of Optimized Bandwidth Management RM cells received at the port. [B:28]
43	Tx Optimized Bandwidth Management RM Cells	0 - 2^{32}-1	N/A	Number of Optimized Bandwidth Management RM cells received at the backplane. [B:28]
44	Rx Undefined RM Cells	0 - 2^{32}-1	N/A	Number of Undefined RM cells received at the port. [B:28]
45	Tx Undefined RM Cells	0 - 2^{32}-1	N/A	Number of Undefined RM cells received at the backplane. [B:28]
46	Tx Rsrc Ovfl Discards	0 - 2^{32}-1	N/A	Number of cells received at the backplane that were discarded due to Resource Overflow. [B:ALL]
47	Rx VI Cell Discards	0 - 2^{32}-1	N/A	Number of cells received at the port that were discarded because of a full VI. [B:12, B:28]
48	Tx VI Cell Discards	0 - 2^{32}-1	N/A	Number of cells received at the backplane discarded because of a full VI. [B:12, B:28]
49	Rx QBIN Cell Discards	0 - 2^{32}-1	N/A	Number of cells received at the port discarded due to QBIN threshold violation. [B:12, B:28]
4A	Tx QBIN Cell Discards	0 - 2^{32}-1	N/A	Number of cells received at the backplane that were discarded due to Qbin threshold violations. [B:12, B:28]
4B	Rx VC Cell Discards	0 - 2^{32}-1	N/A	Number of cells received at the port that were discarded due to VC threshold violations. [B:12, B:28]
4C	Tx VC Cell Discards	0 - 2^{32}-1	N/A	Number of cells received at the backplane that were discarded due to VC threshold violations. [B:ALL]
4D	Rx Cell Filter Discards	0 - 2^{32}-1	N/A	Number of cells received at the port that were discarded due to cell filter action. [B:12, B:28]
4E	Tx Cell Filter Discards	0 - 2^{32}-1	N/A	Number of cells received at the backplane that were discarded due to cell filter action. [B:12, B:28]
4F	Rx Illegal Event Cells	0 - 2^{32}-1	N/A	Number of cells received at the port that caused an reserved event in the hardware. [B:28]
50	Tx Illegal Event Cells	0 - 2^{32}-1	N/A	Number of cells received at the backplane that caused an reserved event in the H/W. [B:28]

Table 1-55 Descriptions for dspchstats Fields for BXM Card (continued)

Object ID	Object (Field) Name	Range/Values	Default	Description
51	Ingress VSVD ACR	0 - 2^{32}-1	N/A	Ingress VSVD allowed Cell Rate. [A:ALL, B:ALL]
52	Egress VSVD ACR	0 - 2^{32}-1	N/A	Egress VSVD allowed Cell Rate. [A:ALL, B:ALL]
53	Egress VC Q Depth	0 - 2^{32}-1	N/A	Current Egress VC Queue Depth. [A:ALL, B:ALL]
54	Bkwd SECB	0 - 2^{32}-1	N/A	Backward reporting Performance Monitoring Severely Errored Cell Blocks. [A:ALL, B:ALL]
55	Bkwd Lost Cells	0 - 2^{32}-1	N/A	Backward reporting Performance Monitoring Lost Cell Count. [A:ALL, B:ALL]
56	Bkwd Misinserted Cells	0 - 2^{32}-1	N/A	Backward reporting Performance Monitoring Misinserted Cell Count. [A:ALL, B:ALL]
57	Bkwd BIPV	0 - 2^{32}-1	N/A	Backward reporting Performance Monitoring Bipolar Violation Count. [A:ALL, B:ALL]
58	Fwd SECB	0 - 2^{32}-1	N/A	Forward reporting Performance Monitoring Severely Errored Cell Blocks. [A:ALL, B:ALL]
59	Fwd Lost Cells	0 - 2^{32}-1	N/A	Forward reporting Performance Monitoring Lost Cell Count. [A:ALL, B:ALL]
5A	Fwd Misinserted Cells	0 - 2^{32}-1	N/A	Forward reporting Performance Monitoring Misinserted Cell Count. [A:ALL, B:ALL]
5B	Fwd BIPV	0 - 2^{32}-1	N/A	Forward reporting Performance Monitoring Bipolar Violation Count. [A:ALL, B:ALL]
5C-5F	RESERVED			
60	SAR Good PDUs Rcv	0 - 2^{32}-1	N/A	Number of good PDUs received by the SAR. [A:ALL, B:ALL]
61	SAR Good PDUs Xmt	0 - 2^{32}-1	N/A	Number of good PDUs transmitted by the SAR. [A:ALL, B:ALL]
62	SAR Rcv PDUs Discarded	0 - 2^{32}-1	N/A	Number of PDUs discarded on the ingress by the SAR. [A:ALL, B:ALL]
63	SAR Xmt PDUs Discarded	0 - 2^{32}-1	N/A	Number of PDUs discarded on the egress by the SAR. [A:ALL, B:ALL]
64	SAR Invalid CRC PDUs Rcvd	0 - 2^{32}-1	N/A	Number of invalid CRC32 PDUs received by the SAR. [A:ALL, B:ALL]
65	SAR Invalid Length PDUs Rcvd	0 - 2^{32}-1	N/A	Number of invalid-length PDUs received by the SAR. [A:ALL, B:ALL]
66	SAR Short Length Failures	0 - 2^{32}-1	N/A	Number of short-length failures detected by the SAR. [A:ALL, B:ALL]
67	SAR Long Length Failures	0 - 2^{32}-1	N/A	Number of long-length failures detected by the SAR. [A:ALL, B:ALL]

dspclnstatcnf (Display Circuit Line Statistics Configuration)

The **dspclnstatcnf** command displays statistics configured as enabled for a selected circuit line.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfclnstats

Syntax

dspclnstatcnf <line>

<line> Specifies the circuit line in the format *slot* or *slot.line*. If the card has only one line, you can enter just the slot.

Function

This command displays the circuit line statistics as enabled by the **cnfclnstats** command, by Cisco WAN Manager, or by IGX features. See Figure 1-78 for an example display.

The Owner column shows what set the statistic. If the owner is "Automatic," the statistic was derived from the features. If the node name appears under Owner, the statistic came from Cisco WAN Manager. If "User" is under Owner, the source of the statistic was the **cnfchstats** command.

Figure 1-78 dspclnstatcnf—Display Circuit Line Statistics Enabled (T1 line)

```
sw83           TN     SuperUser       IGX 8420    9.2      Aug. 1 1998  18:14 PST

Statistics Enabled on Circuit Line 7

Statistic                            Samples  Interval  Size  Peaks  Owner
-----------------------------------  -------  --------  ----  -----  ----------
Frames Slips                              60         0     4   NONE  IGX
Out of Frames                             60         0     4   NONE  IGX
Losses of Signal                          60         0     4   NONE  IGX
Frames Bit Errors                         60         0     4   NONE  IGX
CRC Errors                                60         0     4   NONE  IGX
Out of Multi-Frames                       60         0     4   NONE  IGX
All Ones in Timeslot 16                   60         0     4   NONE  IGX




Last Command: dspclnstatcnf 7


Next Command:
```

dspclnstathist (Display Statistics History for a Circuit Line)

The **dspclnstathist** command displays a history of statistics enabled for a circuit line.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfclnstats, **dspclnstatcnf**

Syntax

dspclnstathist <line> <statistic number> <interval> <owner>

<line>	Specifies the circuit line in the format *slot.line*. If the card set supports only one line, you can enter just the slot number.
<statistic number>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<owner>	Specifies the source of the configuration (“auto,” “user”, or “tftp”).

Function

This command displays the last five occurrences of the circuit line statistic. The circuit line statistic is selected from the list displayed when you first enter this command. Use the **dspclnstatcnf** to display the statistics enabled for the selected channel. Use **cnfclnstats** to enable a statistic.

Figure 1-79 illustrates a display for T1 circuit line 14 bipolar violations (60-second interval) history.

Note You may have to enter owner “auto” in all capital letters.

Figure 1-79 dspclnstathist—Display Circuit Line Statistics History

```
gamma            TRM       SuperUser        Rev:  9.2  Aug. 14 1998 14:00 PDT

Bipolar Violations on Circuit Line 14
Interval: 60 Minute(s), Data Size: 4 Byte(s), 10 S Peaks, Owner: Automatic

 0   -          0(0)
-1   -          0(0)
-2   -          0(0)
-3   -          0(0)
-4   -          0(0)




Last Command: dspclnstathist 14 1 60 AUTO


Next Command:
```

dspcnf (Display Configuration Save/Restore Status)

The **dspcnf** command displays the status for the configuration save/restore processes on all nodes in the network.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

savecnf, **loadcnf**, **runcnf**

Syntax

dspcnf

Function

This command displays the status for the configuration save/restore process. The display lists the various nodes, the backup ID name of the saved configuration, the time and date saved, and the Cisco WAN Manager terminal it is saved on. See Figure 1-80 for an example.

If the status displays "Reserved for Firmware," a firmware image is being maintained in memory after being loaded. Use the **getfwrev 0.0** command to clear the firmware image. Likewise, if a configuration image is displayed, clear the old configuration image using **savecnf clear** or **loadcnf clear**.

Caution Do not use **clrcnf** without discussing the action with TAC.

Figure 1-80 dspcnf—Display Configuration Save/Restore Status

```
sw83           TN    SuperUser       IGX 8420    9.2     Aug. 24 1998  18:21 PST

Node     Backup ID Revision Date/Time (GMT)   Status
-------- --------- -------- ----------------- ---------------------------------
sw78     mark      9.2.00 02/22/97 16:36:26 Unreachable
sw81     mark      9.2.00 02/22/97 16:36:26 Unreachable
sw84     mark      9.2.00 02/22/97 16:36:26 Save on Cisco WAN Manager at sw78 complete
sw79     mark      9.2.00 02/22/97 16:36:26 Save on Cisco WAN Manager at sw78 complete
sw86     mark      9.2.00 02/22/97 16:36:26 Unreachable
sw83     mark      9.2.00 02/22/97 16:36:26 Save on Cisco WAN Manager at sw78 complete





Last Command: dspcnf


Next Command:
```

dspdnld (Display Download)

The **dspdnld** command displays the status of a download to a nodes.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	No

Associated Commands

loadrev, **getfwrev**

Syntax

dspdnld

Function

This command displays the status of any software or firmware download operation from Cisco WAN Manager to the node controller card. You should be connected to the node being downloaded either directly or via a virtual terminal connection. The display download command shows:

- download destination—Node currently being downloaded.
- download type—Destination of the downloaded image, standby RAM or active or standby ROM, or firmware.
- download source—Where the image to be downloaded is currently stored, Cisco WAN Manager, an active or standby controller, or a remote node.
- download image—Where the image is located, ROM or RAM.

This command can be used to check how far along the download has progressed. Figure 1-81 illustrates the command screen. Blocks of data already downloaded appear highlighted; the remaining blocks appear dim. If there was no download initiated when this command was entered, the blocks of data will appear as all zeros.

Figure 1-81 dspdnld—Display Download

```
sw83          TN    SuperUser      IGX 8420    9.2      Aug. 1 1998  18:23 PST

dl_dest:  Active CC                    dl_source: Active CC
dl_type:  None                         dl_image:  ROM       (NPC)

30010800  30020800  30030800  30040800  30050800  30060800  30070800  30080800
30090800  300A0800  300B0800  300C0800  300D0800  300E0800  300F0800  30100800
30110800  30120800  30130800  30140800  30150800  30160800  30170800  30180800
30190800  301A0800  301B0800  301C0800  301D0800  301E0800  301F0800  30200800
30210800  30220800  30230800  30240800  30250800  30260800  30270800  30280800
30290800  302A0800  302B0800  302C0800  302D0800  302E0800  302E3E7C




Last Command: dspdnld


Next Command:
```

dspdutl (Display Data Channel Utilization)

The **dsputl** command displays the percentage of channel utilization of data connections.

Attributes

Jobs	Log	Node	Lock
No	No	IGX	No

Associated Commands

dsputl

Syntax

dspdutl <start bslot> [clear]

<start bslot>	Specifies the slot where the data card is located.
[clear]	Specifies that all data channel utilization buffers should be cleared after the display.

Function

This command displays the percentage utilization for the data connections starting at the back slot (bslot) number you specify. All data connections for the node are displayed (maximum of 32).

The percentage is calculated by dividing the number of packets transmitted over the total number of packets allocated to the specified channel. Only transmit packet rates are used. If percentage use exceeds the use configured, the channel appears in reverse video.

Figure 1-82 illustrates a display where there is very low utilization (2%) on three of the four ports and no utilization of the fourth port. Use the clear option to clear all slots. Use **dsputl** to display utilization for voice channels.

Figure 1-82 dspdutl—Display Data Channel Utilization

```
sw150          TN     SuperUser       IGX 8420    9.2    Aug. 1 1998  20:07 GMT

Percentage utilization        Last Cleared: Date/Time Not Set         Snapshot
From
Slot  1  2  3  4  5  6  7  8    Slot  1  2  3  4  5  6  7  8
13    6 99 99










Last Command: dspdutl 13


Next Command:
```

dspecparm (Display Echo Canceller Parameters)

The **dspecparm** command displays statistics configured as enabled for a selected CDP echo canceller.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	No

Associated Commands

cnfecparm

Syntax

dspecparm <line>

<line>	Specifies the circuit line to display.

Function

This command displays the Integrated Echo Canceller card parameters associated with the specified circuit line. These parameters are set using the **cnfecparm** command. Table 1-56 lists the parameter options. Figure 1-83 illustrates a typical display.

Table 1-56 Echo Canceller Parameters

Number	Parameter	Description
1	Echo Return Loss High	Maximum ERL required for echo canceller to be enabled.
2	Echo Return Loss Low	Minimum ERL required for echo canceller to be enabled.
3	Tone Disabler Type	Selection of protocol to enable tone disabler.
4	Non-Linear Processing	Selects type of post-canceller signal.
5	NLP Threshold	Threshold to enable non-linear processing.
6	Noise Injection	Determines if noise will be injected when NLP is active.
7	Voice Template	Selection of echo canceller template to use.

Figure 1-83 dspecparm—Display Echo Canceller Parameters

```
sw83           TN    SuperUser       IGX 8420    9.2     Aug. 1 1998  18:34 PST

IEC Line 7 Parameters
1  CDP IEC Echo Return Loss High (.1 dBs)  [            60] (D)
2  CDP IEC Echo Return Loss Low  (.1 dBs)  [            30] (D)
3  CDP IEC Tone Disabler Type              [         G.164]
4  CDP IEC Non-Linear Processing           [Center Clipper]
5  CDP IEC Non-Linear Processing Threshold [            18] (D)
6  CDP IEC Noise Injection                 [       Enabled]
7  CDP IEC Voice Template                  [           USA]






Last Command: dspecparm 7


Next Command:
```

dspfwrev (Display Firmware Revision)

The **dspfwrev** command displays the status of card firmware revision image loaded in the controller card's RAM.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

getfwrev, **burnfwrev**

Syntax

dspfwrev

Function

This command displays the revision level and an indication of the length of the firmware in the controller card. It may require two screens to display all the parameters. Figure 1-84 illustrates the screen display. You can use this command while firmware is downloading to a node to get an idea of how far along the downloading process has progressed. The blocks already downloaded appear normal. Blocks that are yet to be downloaded appear shaded.

If no **getfwrev** command was issued, nothing displays. If "Configuration image present" displays, use the **loadcnf clear** command to clear this status.

Figure 1-84 dspfwrev—Display Firmware Revision

```
gamma            TRM       SuperUser        Rev:  9.2  Aug. 14 1998  14:28 PDT

Firmware        Size        Status
F.D.A           256 K       Complete

File            Address     Length      CRC           Burn Address
File            Address     Length      CRC           Burn Address
1               800800      410         22996DDA
1               800800      410         22996DDA
3               805E60      480         85CB29EA
4               80A630      70          57A938AE
4               80A630      70          57A938AE
6               810000      10000       338E45F6
7               820000      4400        95990113
8               835000      1810        875771B2
9               8368A0      15D0        4C597B97




This Command: dspfwrev


Continue?




gamma            TRM       SuperUser        Rev:  9.2  Aug. 14 1998  14:29 PDT

Firmware        Size        Status
F.D.A           256 K       Complete

File            Address     Length      CRC           Burn Address
10              838000      20F0        0F4898D2
11              83A100      1E20        175F4B39
12              83C000      2FC0        F39B0302
13              83F000      1B0         E755FE4E
14              83FFFE      2           A1F4726D




Last Command: dspfwrev


Next Command:
```

dsphitless (Display Statistical History of Hitless Rebuilds)

The **dsphitless** command displays the statistical history of hitless rebuilds that may have occurred within the configured thresholding period. This thresholding period is described under the **cnfnodeparm** command, under Index #42, Maximum Hitless Rebuild Count, and Index #43, Hitless Counter Reset Time parameters.

A statistical history of hitless rebuilds are stored in BRAM, and will survive a full rebuild. Two records of hitless rebuilds are maintained: one will contain information that is within the current thresholding window. When a full rebuild occurs, the hitless rebuild statistics from the current window will be moved to a saved area, and a new current window will begin.

You can enter some optional parameters with the **dsphitless** command, which displays either a summary screen or a detailed screen giving the history of hitless rebuilds. There can be two different versions of each screen, one for the current window and one for the saved previous window. See the Syntax section below for a list of optional parameters you can use with the **dsphitless** command.

If you do not provide any optional parameter, then the default values shown under "Syntax" will be used.

Refer to the screen under System Response to display the time and cause of each hitless rebuild that has occurred since the statistical record of hitless rebuilds was last cleared.

What Hitless Rebuild Feature Provides in Release 9.2

The Hitless Rebuild feature provides the ability for a node to effectively rebuild without affecting user traffic. It substantially decreases the time it takes for the BPX software to settle into its normal operating state after a rebuild.

Note The Hitless Rebuild feature is internal to the switch software on a node. If there is a problem with the node, switch software takes care of it; no user intervention is needed. The following information is provided to explain what happens in switch software when a hitless rebuild occurs.

In recent releases, much work has gone into the control software to prevent restarts. Better queue memory management techniques, faster standby updates, Soft Reset, and Rebuild Prevention are all examples. However, if it is necessary to restart the control software, and a switchover is not possible, then the node will still do a full rebuild. A node with many connections may take a couple of hours to restore itself fully to the network. In the meantime, it is in communication break with some nodes and some network connections are not routed or are not on their preferred routes.

The way to prevent rebuilds is to be able to do a software restart on the processor card without doing a full rebuild of the system. In particular, it is necessary to avoid resetting the line or trunk cards, or interfere with user traffic in any way during the control software restart. This concept is known as a "hitless rebuild."

Purpose of Hitless Rebuild

Hitless rebuild is a modification of control software restart to prevent a full configuration rebuild of the node being done. During most software restarts, the interface cards are not reset to preserve their configurations. In particular, the case where the standby processor card is failed or absent, and the active card must abort will no longer cause a full rebuild.

Acronyms

BRAM (Battery–backed RAM). This is where permanent configuration information for a node is kept.

CC (Control Card, or processor card). The control card on the BPX is the BCC.

DB (Database). An element in the current configuration state of the system. This includes both derived information, such as current route, and configured information, such as preferred route. Some databases are stored in BRAM so that they survive system initializations and power outages. The hitless rebuild feature in Release 9.2 and later switch software affects databases stored in RAM.

pSOS The off-the-shelf operating system kernel used with switch software that runs on the BPX and IGX.

Software Revisions and Interoperability

The Hitless Rebuild feature requires Release 9.2 or later switch software, and works on both the BPX and IGX platforms. This feature is local to a node. Hitless rebuild will function correctly on nodes that are running software that contains the feature, even in a network with mixed software releases, some of which do not have the feature.

Hitless rebuild will operate during upgrades, but will not operate during a downgrade. If a failure occurs that would normally result in a controller card switchover, but the switchover needs to be suppressed due to the different software releases running on the two processors, then a hitless rebuild will be done instead.

If a backoff must be done from an upgrade, then a full rebuild will occur. A *backoff* refers to the state where the new switch software revision has been loaded as the secondary image, and the decision is made to go back to the original revision.

There are no operational problems if, during an upgrade, the new release of software has the Hitless Rebuild feature and the older release does not. Hitless Rebuild will just operate on the processor card with the newer release.

Description of How Hitless Rebuild Works

The purpose of the Hitless Rebuild feature is to minimize the impact on user traffic when a processor card must reinitialize. Unlike a full rebuild, the effect of a control plane failure should have minimal impact upon the user plane. Line and trunk cards should not be reset during a hitless rebuild. Rather than having a node with many connections take up to two hours to restore itself fully to the network, a hitless rebuild will take, at most, only a little longer than a processor card switchover. All existing user connections should be maintained through the initialization. LMI continuity and trunk state should also be preserved.

During a traditional full rebuild, all databases are rebuilt from BRAM. The approach to doing a hitless rebuild is to maintain databases that cannot be rebuilt without affecting user connections, and to rebuild from BRAM any that will not affect user connections. Some key consistency checking of the preserved databases will be performed, such as topology consistency checking, to ensure that the hitless rebuild will work.

In general, almost all software aborts will result in a processor card switchover. If this is not possible, then a hitless rebuild will usually be done. Hitless rebuild is used only when a switch to the standby processor card is not possible or reasonable. For more details on specific types of potential problems that lead to hitless rebuilds or other types of initializations, see Table 1-56, Echo Canceller Parameters.

The main functional difference in behavior from previous switch software releases is that after a rebuild, the control software will settle quickly into its normal operating state, rather than taking a very long time to reset cards and reroute connections.

You use the CLI to enable/disable the Hitless Rebuild feature, and to configure the maximum frequency of hitless rebuilds that can occur before the node enters degraded mode, or a full rebuild is performed.

Most aspects of a full rebuild and a hitless rebuild function the same way. For example, initial synchronization between the switch and Cisco WAN Manager and the loss of statistics information will remain the same.

Safe Switchover

Sometimes shortly after a switchover, the new active processor card will run some diagnostics and detect a failure, causing it to switch back to the original active card. The Hitless Rebuild feature will improve this situation under most conditions. Following any processor card switchover, the new standby will rebuild, preserving the key databases needed for a hitless rebuild (11 seconds). When database updates can start, the standby will rebuild again doing a normal standby rebuild (11 seconds). If there is a failure on the new active card that causes it to switch back before updates can start, the card taking over will do a hitless rebuild. If the active processor card fails while still updating its standby, it will perform a hitless rebuild.

The time it takes the updates to complete to the standby card is 15–25 minutes. A full active rebuild takes about 45 seconds. (These numbers are based on measurements done in Release 8.4.)

Action Taken If the Control Card Fails

During any active control card failure, a decision must be made about the type of initialization to undertake. Table 1-57 shows the possible conditions and the corresponding actions.

Table 1-57 What Happens when a Control Card Restarts or Aborts

Reason	Standby Ready	Standby Updating	Standby Not Ready, Not Updating	Standby State Unknown	Standby Does Not Exist	Standby in Upgrade	Standby State Not Applicable
Aborts (examples include: • bad logical ptr • bad nib DB • bad topology • memory allocs • out of buffers • bad primary revision	Switch	Hitless	Hitless	Hitless	Hitless	Hitless	N/A
Abort (CC mastership error. Active now is standby card)	N/A	N/A	N/A	N/A	N/A	N/A	Full standby rebuild (DBs are corrupted)
Exceptions • Write Protect • Address Error • Trap Error • Bus Unknown	Switch	Hitless	Hitless	Hitless	Hitless	Hitless	N/A
Exceptions • Parity Error	Switch	Hitless	Hitless	Hitless	Hitless	Hitless	N/A
Exceptions • Spurious Int	Switch	Hitless	Hitless	Hitless	Hitless	Hitless	N/A
Bad Image CRC	Switch	Hitless	Hitless	Hitless	Hitless	Hitless	N/A
WatchDog Time-out	Switch	Hitless	Hitless	Hitless	Hitless	Hitless	N/A
User Command • **clrallcnf** • **clrcnf** • **resetcd H**	N/A	N/A	N/A	N/A	N/A	N/A	Full rebuild
Bad CommBus	N/A	N/A	N/A	N/A	N/A	N/A	Degrade Mode
Bus Diagnostics (destructive)	N/A	N/A	N/A	N/A	N/A	N/A	Full rebuild

Table 1-57 What Happens when a Control Card Restarts or Aborts (continued)

Reason	Standby Ready	Standby Updating	Standby Not Ready, Not Updating	Standby State Unknown	Standby Does Not Exist	Standby in Upgrade	Standby State Not Applicable
configuration Changes • **runcnf**	N/A	N/A	N/A	N/A	N/A	N/A	Full rebuild
Bad BCC card	Switch	Ignore	Ignore	Ignore	Ignore	Ignore	N/A
Bad CrossPoint	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore
Preparation for revision change (happens only on the standby card)	N/A	N/A	N/A	N/A	N/A	N/A	Full standby rebuild
Revision Switch	Switch	N/A	N/A	N/A	N/A	N/A	Hitless rebuild on standby
Primary Revision Change	N/A	N/A	N/A	N/A	N/A	N/A	Full rebuild on either card
Starting the updates to the standby card—message is sent by the active card	N/A	N/A	N/A	N/A	N/A	N/A	Full rebuild on the standby card
User **switchcc** (hitless on standby card)	Switch	Switch • Full rebuild on newly active • Hitless rebuild on standby	Switch • Hitless rebuild on standby • Active rebuild depends on rebuild flag state	N/A	N/A	N/A	Hitless rebuild on the standby card

When a controller card switchover to the new card occurs, the new standby card (unless shown differently in Table 1-57) will perform a hitless rebuild maintaining the databases. These databases will be maintained, allowing this card to take over without affecting traffic until the updates are started. After the updates have started, the new standby card will do a full rebuild to get ready to receive the updates.

When the threshold is exceeded and the node is to enter degraded mode, a hitless rebuild will take place first, and degraded mode will be entered after the hitless rebuild completes.

Autobus Diagnostic Feature Disabled

As part of the Hitless Rebuild feature, the Autobus diagnostic feature on the node will be disabled. This is done because the feature is destructive, and it requires the node to undergo a series of full rebuilds causing the node to be out of the network for a long duration of time.

How Memory is Managed During Hitless Rebuilds

Full rebuilds result in the complete initialization of all RAM memory regions. Before the Hitless Rebuild feature, there was no need to save any databases in RAM through an initialization. All databases were rebuilt from configuration stored in BRAM. For a rebuild to be hitless, databases containing certain types of critical information related to trunks, connections, and so on, must survive intact in RAM.

Configuration data that must survive a hitless rebuild will be moved to regions where it will remain intact. These new regions are now managed by the new memory management algorithm, and will be known as “hitless regions.”

A user logged into a node will be able to see the changes by using the Profiler. The user commands **dspprf** and **dspprfhist** show some statistics related to memory usage. (Refer to the service commands for descriptions of **dspprf** and **dspprfhist** commands. Note that you must have service-level privileges to use the debug, or service-level commands.)

Errors and Alarm Handling

The Hitless Rebuild feature does not cause many changes to errors or alarms. However, most of the conditions that cause a hitless rebuild will themselves generate errors or alarms. There are no changes to these.

The Hitless Rebuild feature introduces two new events, indicating the end of a hitless rebuild or a full rebuild. These will be logged into the local event log on the node (which you can view with **dsplog**).

Corresponding Robust Card Alarm messages also will be sent from the node to Cisco WAN Manager, and these will result in traps being generated and sent to Cisco WAN Manager’s RTM proxy. The traps will make the information available to external network management systems that register for traps on Cisco WAN Manager.

As always, the Robust Alarm mechanism does not guarantee that all alarm state transitions will result in messages being sent to Cisco WAN Manager. The mechanism guarantees that “current state” information will be sent; however, when multiple transitions occur close together, only the last one is guaranteed. During a rebuild, a few changes may occur quickly.

The Robust Card Alarm messages sents to Cisco WAN Manager have the following values:

- Trap Type: The current state of the card. (Fail, Active, Down, and so on)
- Alarm Class: (1) Info
- Reason: (3107) BCC Completed hitless rebuild.
- (3108) BCC Completed full rebuild. This Robust Card Alarm messages will result in Cisco WAN Manager traps of the following type:
- TrapType: (20004) Card Alarm
- TrapReason: (3107) BCC Completed hitless rebuild
- (3108) BCC Completed full rebuild

Consistency Checking

The purpose of the Hitless Rebuild feature is to dramatically improve performance of switch software during rebuilds, and to return the node to normal operation as quickly as possible. The intent is to minimize the effect of a control plane failure on the user plane when a node must rebuild. All existing user connections must be maintained through the initialization. LMI continuity and trunk state must be preserved. Unlike a full rebuild, which will result in communication failures, a hitless rebuild will not result in communication failures.

When a hitless rebuild is completed, the node will go through consistency checks to verify the databases. Some of these include topology checking, and verification of LCONS and VIA LCONS to have valid end points.

During normal switch operation, or during normal switchovers into hot standby processor cards, the Hitless Rebuild feature should have no impact on the performance of switch software.

Node Reliability and Maintainability

The Hitless Rebuild feature is a direct improvement to the survivability of the BPX. It significantly reduces the possibility that a failure in the control plane will cause a failure in the user plane. The main purpose of hitless rebuild is to avoid, as much as possible, affecting the user traffic through a node when processor card redundancy is unusable or itself fails and the control card software must rebuild.

Hitless Rebuild Examples

Normal switchcc

The following table shows the steps for a normal **switchcc**. The standby is ready (in Standby state). Up to step 4 the new standby (card 7) can do a hitless rebuild if necessary. Note that a standby card rebuild is not the same as an active card rebuild. This is the same for both normal and hitless rebuilds.

The normal abort case is almost identical to this case. In step 1, the abort causes an automatic switch. The remaining steps are the same.

	Card 7	Card 8
Step 1	Active BCC.	Standby BCC—Ready
Step 2	User issues **switchcc**.	
Step 3	Does Standby Hitless Rebuild, not ready to receive updates, can do Hitless Rebuild.	Activates itself.
Step 4		Kicks off standby updates. Can now do a Hitless Rebuild.
Step 5	Does normal standby rebuild.	Waits for standby
Step 6	Enters normal standby mode, ready to receive updates, cannot do Hitless Rebuild.	
Step 7		Starts standby updates and network updates.

Abort—Standby not Ready

All the action is on the part of the active card, as reflected in Table 1-58.

Table 1-58 What Happens During an Abort, and Standby Card is Not Ready

	Card 7	Card 8
0	Active BCC.	Standby BCC—Not Ready
1	Abort occurs. For example, the card ran out of memory.	
2	Does active hitless rebuild.	
3	Tries to start standby updates.	
4	Starts network updates.	

CommBus failure

In the case of a CommBus failure (see Table 1-59), the active card is no longer certain of the state of any other card. In particular, the active card makes no assumptions about the state of the standby BCC.

Table 1-59 What Happens when a CommBus Failure Occurs

	Card 7	Card 8
0	Active BCC	Standby BCC—Any
1	CommBus failure detected.	
2	Enter Degraded Mode if feature is enabled; otherwise, a full rebuild will occur	

Attributes

Jobs: No Log: No Lock: No Node Type: IGX, BPX

Associated Commands

cnfnodeparm, resetcd, switchcc, dspcds, dsplog

Function

The **dsphitless** command displays the statistical history of hitless rebuilds that may have occurred within the configured thresholding period. This thresholding period is part of the SuperUser command **cnfnodeparm**.

Statistical history of hitless rebuilds will be stored in BRAM, and will survive a full rebuild. Two records of hitless rebuilds will be kept. One will contain information that is within the current thresholding window. When a full rebuild occurs, the hitless rebuild statistics from the current window will be moved to a saved area, and a new current window will begin.

The command **dsphitless** accepts some optional parameters, and will display either a summary screen or a detailed screen providing the history of hitless rebuilds. There can be two different versions of each screen, one for the current window and one for the saved previous window. See the Syntax section for a list of the optional parameters.

Note You can use the f, a, c, and d options listed below on the command line at the same time (for example, **dsphitless -d -a**).

Syntax

dsphitless [summary screen (default)] or [d - detailed screen]

dsphitless [active window (default)] or [p - previous window]

dsphitless [c - clear stats for current window]

dsphitless [s - standby stats]

System Response

Figure 1-85 dsphitless—Parameters

```
sw99      TN     SuperUser     BPX 8620     9.2.10     Aug. 27 1998 14:59 GMT

  current hitless rebuild count:       7
  high water mark:                     9
  cnf max before full rebuild:         10
  cnf reset timer:                     24 hours
  most recent hitless rebuild:         08/27/98 14:27:09
  oldest hitless still in count:       08/27/98 11:42:18
  Hitless stats cleared:               07/29/98 12:00:05
  Action when cnf max is exceeded:     full rebuild




Last Command: dsphitless

Next Command:
```

Figure 1-86 dsphitless—Display Statistical History of Hitless Rebuilds

```
sw99        TN      SuperUser        BPX 15    9.2.10      Aug. 27 1998 14:59 GMT


1   04/07/98 14:27:09   software abort 1000003
2   04/07/98 13:58:46   software abort 1000003
3   04/07/98 13:32:24   software abort 1000003
4   04/07/98 12:57:36   software abort 1000003
5   04/07/98 12:28:29   software abort 1000003
6   04/07/98 12:07:16   software abort 1000003
7   04/07/98 11:42:18   software abort 1000003




Last Command: dsphitless d p

Next Command:
```

dsplnstatcnf (Display Statistics Enabled for a Line)

The **dsplnstatcnf** command displays statistics configured as enabled for a selected line.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnflnstats

Syntax

dsplnstatcnf <line>

<line>	Specifies the line.

Function

This command displays the line statistics as enabled by the **cnflnstats** command, by Cisco WAN Manager, or by node features. (Note that the **dsplnstatcnf** command is the same as **dspclnstatcnf**.) Figure 1-87 illustrates an example display.

The Owner column identifies who or what set the statistic. If the Owner column shows “Automatic,” the node’s features set the statistic. If the node name appears under Owner, Cisco WAN Manager set the statistic. If the user name appears under Owner, the **cnfchstats** command executed from the command line interface set the statistic.

Figure 1-87 dsplnstatcnf—Display Statistics Enabled for a Line

```
cc2            LAN   SuperUser       IGX 8430    9.2     Aug. 30 1998 11:38 PST

Statistics Enabled on Circuit Line 15

Statistic                            Samples  Interval  Size  Peaks  Owner
-----------------------------------  -------  --------  ----  -----  ----------
Bipolar Violations                        60         0     4   NONE  IGX
Frames Slips                              60         0     4   NONE  IGX
Out of Frames                             60         0     4   NONE  IGX
Losses of Signal                          60         0     4   NONE  IGX
Frames Bit Errors                         60         0     4   NONE  IGX
CRC Errors                                60         0     4   NONE  IGX
Out of Multi-Frames                       60         0     4   NONE  IGX
All Ones in Timeslot 16                   60         0     4   NONE  IGX



Last Command: dsplnstatcnf 15

Next Command:
```

dsplnstathist (Display Statistics Data for a Line)

The **dsplnstathist** command displays a history of statistics configured as enabled for a selected line.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnflnstats, **dsplnstatcnf**

Syntax

dsplnstathist <line> <statistic number> <interval> <owner>

<line>	Specifies the circuit line in the format *slot.line*. If the card set supports only one line, you can enter just the slot number.
<statistic number>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<owner>	Specifies the source of the configuration ("auto," "user", or "tftp").

Function

This command displays the last five occurrences of the line statistic. (Note that **dspclnstathist** the command is the same as **dsplnstathist**.) The line statistic is selected from the list displayed when this command is first entered. Use the **dsplnstatcnf** to display the statistics enabled on the selected channel. Use **cnflnstats** to enable a statistic.

Figure 1-88 illustrates an example display.

Note You may have to enter owner "auto" in all capital letters.

Figure 1-88 dsplnstathist—Display Statistics Data for a Line

```
pubsbpx1       TN    SuperUser       BPX 15    9.2 Mar. 24 1998 16:33 PST

Line Statistic Types

 3) Loss of Frames                       41) BIP-8 Errors
 4) Loss of Signal                       42) BIP-8 Errored Seconds
29) Line Code Violation                  43) BIP-8 Severely Err Secs.
30) Line Errored Seconds                 44) Cell Framing Sev. Err Frame Secs
31) Line Severely Err Secs               45) Cell Framing Unavail. Secs.
32) Line Parity Errors                   46) HCS Errors
33) Errored Seconds - Parity             98) Frame Sync Errors
34) Severely Err Secs - Parity           141) FEBE Counts
35) Path Parity Errors                   143) Cell Framing FEBE Err. Secs.
36) Errored Secs - Path                  144) Cell Framing FEBE Sev. Err. Secs.
37) Severely Err Secs - Path             145) Cell Framing FEBE Counts
38) Severely Err Frame Secs
40) Unavail. Seconds

This Command: dsplnstathist 5.1


Continue?

pubsbpx1       TN    SuperUser       BPX 15    9.2 Mar. 24 1998 16:34 PST

Line Statistic Types

146) Cell Framing FE Counts
147) HCS Errored Seconds
148) HCS Severely Err. Secs.
151) YEL Transitions
152) Cell Framing YEL Transitions
153) Alarm Indication Signal
194) HCS Correctable Error
195) HCS Correctable Error Err. Secs
196) HCS Correctable Error SevErr Secs




This Command: dsplnstathist 5.1


Statistic Type:
```

dspphyslnstatcnf (Display Statistics Enabled for a Physical Line)

The **dspphyslnstatcnf** command displays statistics configured as enabled for a selected line on a UXM card.

The **dspphyslnstatcnf** command now lets you view the configuration of the following additional physical line statistics (which support the ATM Forum–compliant IMA protocol). A summary and description of these statistics follow in Table 1-60.

Table 1-60 IMA Physical Line Statistics

Statistics Object	Definition
IV-IMA	ICP Violations: count of errored, invalid or missing ICP cells during non-SES-IMA or non-UAS-IMA condition.
Near End Severely Errored Seconds (SES-IMA)	Count of one second intervals containing 30% of the ICP cells counted as IV-IMAs (see note 1), or one or more link defects (e.g., LOS, OOF/LOF, AIS or LCD), LIF, LODS defects during non-UAS-IMA condition.
Far End Severely Errored Seconds (SES-IMA-FE)	Count of one second intervals containing one or more RDI-IMA defects during non-UAS-IMA-FE condition.
Near End Unavailable Seconds (UAS-IMA)	Unavailable seconds: unavailability begins at the onset of 10 contiguous SES-IMA and ends at the onset of 10 contiguous seconds with no SES-IMA.
Far End Unavailable Seconds (UAS-IMA-FE)	Unavailable seconds at FE: unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the onset of 10 contiguous seconds with no SES-IMA-FE.
Near End Tx Unusable Seconds (Tx-UUS-IMA)	Tx Unusable seconds: count of Tx Unusable seconds at the NE LSM.
Near End Rx Unusable Seconds (Rx-UUS-IMA)	Rx Unusable seconds: count of Rx Unusable seconds at the NE LSM.
Far End Tx Unusable Seconds (Tx-UUS-IMA-FE)	Tx Unusable seconds at FE: count of seconds with Tx Unusable indications from the FE LSM.
Far End Rx Unusable Seconds (Rx-UUS-IMA-FE)	Rx Unusable seconds at FE: count of seconds with Rx Unusable indications from the FE LSM.
Near End Tx No. of Failures (Tx-FC)	Count of NE Tx link failure alarm conditions.
Near End Rx No. of Failures (Rx-FC)	Count of NE Rx link failure alarm conditions.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfphyslnstats

Syntax

dspphyslnstatcnf <line>

<line>	Specifies the line.

Function

This command displays the physical line statistics on a UXM card as enabled by the **cnfphyslnstats** command, by Cisco WAN Manager, or by node features. Figure 1-89 illustrates an example display.

The Owner column identifies who or what set the statistic. If the Owner column shows "Automatic," the node's features set the statistic. If the node name appears under Owner, Cisco WAN Manager set the statistic. If the user name appears under Owner, the **cnfchstats** command executed from the command line interface set the statistic.

Figure 1-89 dspphyslnstatcnf—Display Statistics Enabled for an IMA line on an IGX

```
sw225          TRM   StrataCom       IGX 8420  9.3.a0    Mar. 8 2000  08:22 GMT

Statistics Enabled on Physical Line 5.1

Statistic                             Samples  Interval  Size  Peaks  Owner
-----------------------------------   -------  --------  ----  -----  ----------
  3) Out of Frames                         60         0     4   NONE  AUTO
  4) Losses of Signal                      60         0     4   NONE  AUTO
  5) Frames Bit Errors                     60         0     4   NONE  AUTO
  6) CRC Errors                            60         0     4   NONE  AUTO
 29) Line Code Violations                  60         0     4   NONE  AUTO
 32) Line Parity Errors                    60         0     4   NONE  AUTO
 41) BIP-8 Code Violations                 60         0     4   NONE  AUTO
 98) Frame Sync Errors                     60         0     4   NONE  AUTO
220) INVMUX: Severely Err. Secs.            2         1     2     10  USER


Last Command: dspphyslnstatcnf 5.1
```

Figure 1-90 dspphyslnstatcnf—Display Statistics Enabled for a Line

```
cc2            LAN   SuperUser       IGX 32    9.2     Aug. 30 1998 11:38 PST

Statistics Enabled on Circuit Line 15

Statistic                            Samples  Interval  Size  Peaks  Owner
-----------------------------------  -------  --------  ----  -----  ----------
Bipolar Violations                        60         0     4   NONE  IGX
Frames Slips                              60         0     4   NONE  IGX
Out of Frames                             60         0     4   NONE  IGX
Losses of Signal                          60         0     4   NONE  IGX
Frames Bit Errors                         60         0     4   NONE  IGX
CRC Errors                                60         0     4   NONE  IGX
Out of Multi-Frames                       60         0     4   NONE  IGX
All Ones in Timeslot 16                   60         0     4   NONE  IGX



Last Command: dspphyslnstatcnf 15

Next Command:
```

Table 1-61 Physical Line Statistics

Statistic Object	Stat Type	Card Type	Definition
Total Cells Received	Logical	UXM/BXM	All
Total Cells Transmitted	Logical	UXM/BXM	All
LOS Transitions	Physical	UXM/BXM	All
LOF Transitions	Physical	UXM/BXM	All
Line AIS Transitions	Physical	UXM/BXM	T3/E3/Sonet
Line RDI (Yellow) Transitions	Physical	UXM/BXM	T3/E3/Sonet
Uncorrectable HCS Errors	Physical	UXM	T3/E3/Sonet
Correctable HCS Errors	Physical	UXM	T3/E3/Sonet
HCS Errors	Physical	BXM	T3/E3/Sonet
Line Code Violations, ES, and SES	Physical	BXM	T3/E3
Line Parity (P-bit]) Errors, ES, and SES	Physical	BXM	T3
Path Parity (C-bit) Errors, ES, and SES	Physical	BXM	T3
Far End Block Errors	Physical	BXM	T3
Framing Errors and SES	Physical	BXM	T3/E3
Unavailable Seconds	Physical	BXM	T3/E3
PLCP LOF and SES	Physical	BXM	T3
PLCP YEL	Physical	BXM	T3
PLCP BIP-8, ES, SES	Physical	BXM	T3

Table 1-61 Physical Line Statistics (continued)

Statistic Object	Stat Type	Card Type	Definition
PLCP FEBE, ES, SES	Physical	BXM	T3
PLCP FOE, ES, SES	Physical	BXM	T3
PLCP UAS	Physical	BXM	T3
LOC Errors	Physical	UXM/BXM	E3/Sonet
LOP Errors	Physical	UXM/BXM	Sonet
Path AIS Errors	Physical	UXM/BXM	Sonet
Path RDI Errors	Physical	UXM/BXM	Sonet
Section BIP-8 Counts, ES, and SES	Physical	UXM/BXM	Sonet
Line BIP-24 Counts, ES, and SES	Physical	UXM/BXM	Sonet
Line FEBE Counts, ES, and SES	Physical	UXM/BXM	Sonet
Section SEFS	Physical	UXM/BXM	Sonet
Line UAS and FarEnd UAS	Physical	UXM/BXM	Sonet
Clock Loss Transitions	Physical	UXM	T1/E1
Frame Loss Transitions	Physical	UXM	T1/E1
Multiframe Loss	Physical	UXM	T1/E1
CRC Errors	Physical	UXM	T1/E1
BPV	Physical	UXM	T1
Frame Bit Errors	Physical	UXM	E1
Unknown VPI/VCI Count	Physical	UXM/BXM	All
Errored LPC Cell Count	Physical	UXM	All
Non-zero GFC Cell Count	Physical	UXM/BXM	
Max Differential Delay	Physical	UXM	T1/E1
Uncorrectable HEC errors	Physical	UXM	All
Cell Hunt Count	Physical	UXM	T1/E1
Bandwidth Changed Count	Physical	UXM	T1/E1
Receive CLP=0 Cell Count	Logical	UXM/BXM	All
Receive CLP=1 Cell Count	Logical	UXM/BXM	All
Receive CLP=0 Cell Discard	Logical	UXM/BXM	All
Receive CLP=1 Cell Discard	Logical	UXM/BXM	All
Transmit CLP=0 Cell Count	Logical	UXM/BXM	All
Transmit CLP=1 Cell Count	Logical	UXM/BXM	All
Receive OAM Cell Count	Logical	UXM/BXM	All
Transmit OAM Cell Count	Logical	UXM/BXM	All
Receive RM Cell Count	Logical	UXM/BXM	All

Table 1-61 Physical Line Statistics (continued)

Statistic Object	Stat Type	Card Type	Definition
Transmit RM Cell Count	Logical	UXM/BXM	All
For Each Traffic Type: (V,TS,NTS,ABR,rt-VBR, nrt-VBR,CBR, BdatB, BdatA,HP)			
Cells Served	Logical	UXM/BXM	All
Maximum Qbin Depth	Logical	UXM/BXM	All
Cells Discarded Count	Logical	UXM/BXM	All

dspphysInstathist (Display Statistics Data for a Physical Line)

The **dspphyslnstathist** command displays a history of statistics configured as enabled for a selected physical line on an active IMA trunk or line on a UXM card.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfphyslnstats, **dspphyslnstatcnf**

Syntax

dspphyslnstathist <line> <statistic number> <interval> <owner>

<line>	Specifies the circuit line in the format *slot.line*. If the card set supports only one line, you can enter just the slot number.
<statistic number>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<owner>	Specifies the source of the configuration (“auto,” “user”, or “tftp”).

Function

This command displays the last five occurrences of the line statistic for a physical line on an active IMA trunk on a UXM card. The line statistic is selected from the list displayed when this command is first entered. Use the **dspphyslnstatcnf** to display the statistics enabled on the selected channel. Use **cnfphyslnstats** to enable a statistic.

Figure 1-91 illustrates an example display.

Note You may have to enter owner “auto” in all capital letters.

Figure 1-91 dspphysInstathist—Display Statistics Data for an IMA line

```
sw225          TRM   StrataCom       IGX 8420  9.3.a0    Mar. 8 2000  08:23 GMT

Line Statistic Types

  3) Out of Frames                       42) Cell Framing Errored Seconds
  4) Losses of Signal                    43) Cell Framing Sev. Err Secs.
  5) Frames Bit Errors                   44) Cell Framing Sec. Err Frame Secs
  6) CRC Errors                          45) Cell Framing Unavail. Secs.
 29) Line Code Violations                62) Total Cells Tx to line
 30) Line Errored Seconds                69) Total Cells Rx from line
 31) Line Severely Err Secs              98) Frame Sync Errors
 32) Line Parity Errors                 143) Cell Framing FEBE Err Secs
 33) Errored Seconds - Line             144) Cell Framing FEBE Sev. Err. Secs.
 34) Severely Err Secs - Line           151) Yellow Alarm Transition Count
 38) Severely Err Frame Secs            152) Cell Framing Yel Transitions
 40) Unavail. Seconds                   153) AIS Transition Count
 41) BIP-8 Code Violations              193) Loss of Cell Delineation
194) Loss of Pointer                    207) Section BIP8 Severely Err. Secs.
195) OC3 Path AIS                       208) Section Sev. Err. Framing Secs.
196) OC3 Path YEL                       209) Line BIP24 Severely Err. Secs.
197) Section BIP8                       210) Line FEBE Severely Err. Secs.
198) Line BIP24                         211) Path BIP8 Severely Err. Secs.
199) Line FEBE                          212) Path FEBE Severely Err. Secs.
200) Path BIP8                          213) Line Unavailable Secs.
201) Path FEBE                          214) Line Farend Unavailable Secs.
202) Section BIP8 Err. Secs.            215) Path Unavailable Secs.
203) Line BIP24 Err. Secs.              216) Path Farend Unavailable Secs.
204) Line FEBE Err. Secs.               217) HCS Uncorrectable Error
205) Path BIP8 Err. Secs.               218) HCS Correctable Error
206) Path FEBE Err. Secs.               219) INVMUX: line violations
220) INVMUX: Severely Err. Secs.
221) INVMUX: Farend Sev. Err. Secs.
222) INVMUX: Unavailable Secs.
223) INVMUX: Farend Unavail Secs.
224) INVMUX: Tx Unusable Seconds
225) INVMUX: Rx Unusable Seconds
226) INVMUX: Farend Tx Unusable Secs.
227) INVMUX: Farend Rx Unusable Secs.
228) INVMUX: Tx Failure Count
229) INVMUX: Rx Failure Count

Statistic Type:
Owner (AUTO/USER/TFTP):
Collection Interval (1 - 60 Minutes, in 1 minute increments):

INVMUX: Severely Err. Secs. on Physical Line 5.1
Interval: 1 Minute(s), Data Size: 2 Byte(s), 10 Peaks, Owner: USER

 0   - 0         (0          )
-1   - 0         (0          )




Last Command: dspphyslnstathist 5.1 220 user 1
```

dspportstatcnf (Display Statistics Enabled for a FR Port)

The **dspportstatcnf** command displays statistics configured as enabled for a selected Frame Relay port.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfportstats

Syntax

dspclnstatcnf <line>

<line>	Specifies the port in the form *slot.port*: do NOT enter the DLCI.

Function

This command displays the enabling of Frame Relay port statistics. These are the statistics set by the **cnfportstats** command, by Cisco WAN Manager, or by node features. See Figure 1-92 for an example.

The owner column shows what set the statistic. If the Owner column is Automatic, it was set by feature; if it is node name, it was set by Cisco WAN Manager; if it is user, it was set with the **cnfportstats** command.

Figure 1-92 dspportstatcnf—Display Port Statistics Enabled

```
gamma            Cisco WAN Manager       YourID           Rev:  9.2  Aug. 14 1998 13:47
PDT

Statistics Enabled on Port 8.1

Statistic                            Samples  Interval  Size  Peaks  Owner
------------------------------------ -------  --------  ----  -----  ----------
Frames Received                            5        60     4    1 M  beta
Frames Received                            5        60     4    1 M  beta
Bytes Received                             5        60     4    1 M  beta








Last Command: dspportstatcnf 8.1
```

dspportstathist (Display Statistics History for An FR Port)

The **dspportstathist** command displays a history of statistics configured as enabled for a selected Frame Relay port.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX	Yes

Associated Commands

cnfportstats, **dspportstatcnf**

Syntax

dspportstathist <line> <statistic number> <interval> <owner>

<line>	Specifies the circuit line in the format *slot.line*. If the card set supports only one line, you can enter just the slot number.
<statistic number>	Specifies the type of statistic to enable/disable.
<interval>	Specifies the time interval of each sample (1–255 minutes).
<owner>	Specifies the source of the configuration (“auto,” “user”, or “tftp”).

Function

This command displays the data for the last five occurrences of the port statistic. The port statistic is selected from the list displayed when this command is first entered. Use the **dspportstatcnf** to display the statistics enabled on the selected port. Use **cnfportstats** to enable a statistic.

Note You may have to enter owner “auto” or “user” in all capital letters.

Figure 1-93 dspportstathist—Display Port Statistics History UXM (IGX)

```
sw144          TN    Cisco          IGX 8420  9.3.10 Date/Time Not Set

Port Statistic Types

34) PORT: Unknwn VPI/VCI cnt           48) PORT: # of cells rcvd
35) VI: Cells rcvd w/CLP=1             49) PORT: # of cells xmt
36) VI: OAM cells received             51) INVMUX: HEC cell errors
37) VI: Cells tx w/CLP=1               52) INVMUX: LCP cell errors
39) VI: Cells received w/CLP=0         53) INVMUX: Cell Hunt Count
40) VI: Cells discarded w/CLP=0        54) INVMUX: Bandwidth Change Count
41) VI: Cells discarded w/CLP=1        55) ILMI: Get Req PDUs rcvd
42) VI: Cells transmitted w/CLP=0      56) ILMI: GetNxt Req PDUS rx
43) VI: OAM cells transmitted          57) ILMI: GetNxt Req PDUS xmt
44) VI: RM cells received              58) ILMI: Set Req PDUs rcvd
45) VI: RM cells transmitted           59) ILMI: Trap PDUs rcvd
46) VI: Cells transmitted              60) ILMI: Get Rsp PDUs rcvd
47) VI: Cells received                 61) ILMI: Get Req PDUs xmt

This Command: dspportstathist 4.1


Continue?

sw144          TN    Cisco          IGX 8420  9.3.10 Date/Time Not Set

Port Statistic Types

62) ILMI: Get Rsp PDUs xmt             75) LMI: Invalid LMI PDU length rcvd
63) ILMI: Set Req PDUs xmt             76) LMI: Unknown LMI PDUs rcvd
64) ILMI: Trap PDUs xmt                77) LMI: Invalid LMI IE rcvd
65) ILMI: Unknwn PDUs rcvd             78) LMI: Invalid Transaction IDs
66) LMI: Status messages xmt           79) INVMUX: Unavailable Seconds
67) LMI: Updt Status msgs xmt          80) INVMUX: Near End Fail Count
68) LMI: Status Ack msgs xmt           81) INVMUX: Last Proto Fail Code
69) LMI: Status Enq msgs rcvd          82) INVMUX: Slowest Link
70) LMI: Status Enq msgs xmt           86) Q2 Cells Tx
71) LMI: Status msgs rcvd              87) Tx Q2 CDscd
72) LMI: Updt Status msg rcvd          88) Egr CRx Q2
73) LMI: Status Ack msg rcvd           89) Q3 Cells Tx
74) LMI: Invalid LMI PDUs rcvd         90) Tx Q3 CDscd

This Command: dspportstathist 4.1


Continue?


sw144          TN    Cisco          IGX 8420  9.3.10 Date/Time Not Set

Port Statistic Types

91) Egr CRx Q3                         113) Q11 Cells Tx
101) Q7 Cells Tx                       114) Tx Q11 CDscd
102) Tx Q7 CDscd                       115) Egr CRx Q11
103) Egr CRx Q7                        116) Q12 Cells Tx
104) Q8 Cells Tx                       117) Tx Q12 CDscd
105) Tx Q8 CDscd                       118) Egr CRx Q12
106) Egr CRx Q8                        119) Q13 Cells Tx
107) Q9 Cells Tx                       120) Tx Q13 CDscd
108) Tx Q9 CDscd                       121) Egr CRx Q13
109) Egr CRx Q9                        122) Q14 Cells Tx
110) Q10 Cells Tx                      123) Tx Q14 CDscd
```

```
111) Tx Q10 CDscd                      124) Egr CRx Q14
112) Egr CRx Q10                       125) Q15 Cells Tx

This Command: dspportstathist 4.1


Continue?

sw144          TN    Cisco           IGX 8420  9.3.10 Date/Time Not Set

Port Statistic Types

126) Tx Q15 CDscd
127) Egr CRx Q15

This Command: dspportstathist 4.1


Statistic Type:
```

Figure 1-94 dspportstathist—Display Port Statistics History BXM (BPX)

```
rogue          TN    Cisco           BPX 8620  9.3.10    July 14 2000 11:43
GMT

Port Statistic Types

 1) Unknown VPI/VCI count               24) Get Request PDUs transmitted
 8) Number of cells received            25) Get Response PDUs transmitted
 9) Number of cells rcvd w/CLP set      26) Trap PDUs transmitted
12) Number of cells xmitted             27) Unknown ILMI PDUs Received
13) OAM cells received count            28) Status messages transmitted
15) Number of cells xmitted w/CLP set   29) Update Status messages
transmitted
18) Get Request PDUs received           30) Status Acknowledge msgs
transmitted
19) Get Next Request PDUS received      31) Status Enquiry messages received
20) Get Next Request PDUS transmitted   32) Status Enquiry mesgs transmitted
21) Set Request PDUs received           33) Status messages received
22) Trap PDUs received                  34) Update Status messages received
23) Get Response PDUs received          35) Status Acknowledge messages
received

This Command: dspportstathist 12.3

Continue?

rogue          TN    Cisco           BPX 8620  9.3.10    July 14 2000 11:44
GMT

Port Statistic Types

36) Invalid LMI PDUs received received  48) Last unknown VPI/VCI pair
37) Invalid LMI PDU length received     49) Tx Cells Served on Qbin 0
38) Unknown LMI PDUs received           50) Tx Cells Discarded on Qbin 0
39) Invalid LMI IE received             51) Tx Cells Received on Qbin 0
40) Invalid Transaction IDs             52) Tx Cells Served on Qbin 1
41) Number of cells rcvd w/clp 0        53) Tx Cells Discarded on Qbin 1
42) Number of cells dscd w/clp 0        54) Tx Cells Received on Qbin 1
43) Number of cells dscd w/clp set      55) Tx Cells Served on Qbin 2
44) Number of cells tx w/clp 0          56) Tx Cells Discarded on Qbin 2
45) Tx OAM cell count                   57) Tx Cells Received on Qbin 2
46) Rx RM cell count                    58) Tx Cells Served on Qbin 3
47) Tx RM cell count                    59) Tx Cells Discarded on Qbin 3

This Command: dspportstathist 12.3

Continue?

rogue          TN    Cisco           BPX 8620  9.3.10    July 14 2000 11:44
GMT

Port Statistic Types

60) Tx Cells Received on Qbin 3         87) Tx Cells Received on Qbin 12
76) Tx Cells Served on Qbin 9           88) Tx Cells Served on Qbin 13
77) Tx Cells Discarded on Qbin 9        89) Tx Cells Discarded on Qbin 13
78) Tx Cells Received on Qbin 9         90) Tx Cells Received on Qbin 13
79) Tx Cells Served on Qbin 10          91) Tx Cells Served on Qbin 14
80) Tx Cells Discarded on Qbin 10       92) Tx Cells Discarded on Qbin 14
81) Tx Cells Received on Qbin 10        93) Tx Cells Received on Qbin 14
82) Tx Cells Served on Qbin 11          94) Tx Cells Served on Qbin 15
83) Tx Cells Discarded on Qbin 11       95) Tx Cells Discarded on Qbin 15
84) Tx Cells Received on Qbin 11        96) Tx Cells Received on Qbin 15
```

```
85) Tx Cells Served on Qbin 12
86) Tx Cells Discarded on Qbin 12

This Command: dspportstathist 12.3

Statistic Type:
```

Figure 1-95 dspportstathist—Display Port Statistics History BXM (BPX)

```
rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:43 GMT

Port Statistic Types

 1) Unknown VPI/VCI count              24) Get Request PDUs transmitted
 8) Number of cells received           25) Get Response PDUs transmitted
 9) Number of cells rcvd w/CLP set     26) Trap PDUs transmitted
12) Number of cells xmitted            27) Unknown ILMI PDUs Received
13) OAM cells received count           28) Status messages transmitted
15) Number of cells xmitted w/CLP set  29) Update Status messages transmitted
18) Get Request PDUs received          30) Status Acknowledge msgs transmitted
19) Get Next Request PDUS received     31) Status Enquiry messages received
20) Get Next Request PDUS transmitted  32) Status Enquiry mesgs transmitted
21) Set Request PDUs received          33) Status messages received
22) Trap PDUs received                 34) Update Status messages received
23) Get Response PDUs received         35) Status Acknowledge messages received


This Command: dspportstathist 12.3


Continue?

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:44 GMT

Port Statistic Types

36) Invalid LMI PDUs received received  48) Last unknown VPI/VCI pair
37) Invalid LMI PDU length received     49) Tx Cells Served on Qbin 0
38) Unknown LMI PDUs received           50) Tx Cells Discarded on Qbin 0
39) Invalid LMI IE received             51) Tx Cells Received on Qbin 0
40) Invalid Transaction IDs             52) Tx Cells Served on Qbin 1
41) Number of cells rcvd w/clp 0        53) Tx Cells Discarded on Qbin 1
42) Number of cells dscd w/clp 0        54) Tx Cells Received on Qbin 1
43) Number of cells dscd w/clp set      55) Tx Cells Served on Qbin 2
44) Number of cells tx w/clp 0          56) Tx Cells Discarded on Qbin 2
45) Tx OAM cell count                   57) Tx Cells Received on Qbin 2
46) Rx RM cell count                    58) Tx Cells Served on Qbin 3
47) Tx RM cell count                    59) Tx Cells Discarded on Qbin 3


This Command: dspportstathist 12.3


Continue?

rogue          TN    Cisco           BPX 8620  9.3.1Z    July 14 2000 11:44 GMT

Port Statistic Types

60) Tx Cells Received on Qbin 3        87) Tx Cells Received on Qbin 12
76) Tx Cells Served on Qbin 9          88) Tx Cells Served on Qbin 13
77) Tx Cells Discarded on Qbin 9       89) Tx Cells Discarded on Qbin 13
78) Tx Cells Received on Qbin 9        90) Tx Cells Received on Qbin 13
79) Tx Cells Served on Qbin 10         91) Tx Cells Served on Qbin 14
80) Tx Cells Discarded on Qbin 10      92) Tx Cells Discarded on Qbin 14
81) Tx Cells Received on Qbin 10       93) Tx Cells Received on Qbin 14
82) Tx Cells Served on Qbin 11         94) Tx Cells Served on Qbin 15
83) Tx Cells Discarded on Qbin 11      95) Tx Cells Discarded on Qbin 15
84) Tx Cells Received on Qbin 11       96) Tx Cells Received on Qbin 15
85) Tx Cells Served on Qbin 12
86) Tx Cells Discarded on Qbin 12
```

```
This Command: dspportstathist 12.3

Statistic Type:
```

dsprevs (Display Revisions)

The **dsprevs** command displays the system software revision running on all nodes in the network.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

runrev, **loadrev**

Syntax

dsprevs

Function

This command displays the configuration and status of the primary and secondary software revisions for all nodes in the network. The primary revision is the software that is running on the node. The secondary revision is the software that is available in memory but not being run. Table 1-62 lists the various status messages. Figure 1-96 illustrates a typical display.

Table 1-62 Status of Node Software Revisions

Status	Description
unavailable	The revision is currently unavailable for the node displayed. The revision has not propagated to the node yet.
available	The node has located the specified revision but has not yet downloaded it.
partial	The revision was only partially downloaded. Indicates the download was temporarily interrupted.
downloading	The revision is in the process of being downloaded. Blocks of data are being transferred.
loaded	The revision has completed downloading but is not ready for running.
upgrading	The controller card is being upgraded by the current revision. This process generally occurs immediately following the download.
upgraded	The upgrade procedure has been completed.
running	The primary revision is currently being used to run the node.

Figure 1-96 dsprevs—Display Revisions

```
sw171          TN    SuperUser       IGX 8420  9.2.h0    June 26 1998 14:52 GMT
                   ------ Primary ------         ----- Secondary -----
NodeName           Status       Revision         Status       Revision
sw29               Running      9.2.h3
sw43               Running      9.2.h5
sw44               Running      9.2.h3
sw171              Running      9.2.h0           Loaded       9.2.h9
sw177              Running
sw106              Running      9.2.h3
sw181              Running      9.2.h3

        Lowest revision running in net: 9.2.h0


Last Command: dsprevs

Next Command:
```

dsprobst (Display Robust Statistics)

The **dsprobst** command displays the statistics associated with the Robust Alarms feature.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

cnfrobparm

Syntax

dsprobst [clear]

[clear]	Specifies that the statistics buffers should be cleared after the display.

Function

This command displays the statistics associated with the Robust Alarms messages between the node and Cisco WAN Manager NMS. The optional “clear” argument clears the statistics buffers. Figure 1-97 illustrates a sample display screen.

Figure 1-97 dsprobst—Display Robust Statistics

```
sw197          TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  05:43 GMT

Robust Communications Statistics since : Date/Time Not Set

  Updts msg xmit:      0
  Updts msg ackd:      0
  Updts ack tout:      0
  LCBs freed:          0
  Updts ack reset:     0









Last Command: dsprobst


Next Command:
```

dsprrst (Display Reroute Statistics)

The **dsprrst** command displays the connection rerouting statistics for the network.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

rrtcon, **drtop**

Syntax

dsprrst [s] [clear]

[s]	
[clear]	Specifies that the reroute statistics buffers should be cleared after the display.

Function

This command displays the statistics related to connection rerouting resulting from failed trunks. These statistics may be useful in determining the performance of the reroute algorithm. Use the "clear" option to clear the counters before accumulating the statistics. Table 1-63 lists reroute statistics.

Table 1-63 Display Reroute Statistics

Statistic	Description
Number of Completed Routes	This is the total number of connections routed since the NPC rebuilt.
Number of Failed Routes	This is the number of attempted reroutes that failed for any reason.
Number of Collisions	During a reroute, the initiating node locks all nodes on the route until rerouting is done. If another node attempts to reroute through a locked node, a collision occurs, so the second node must wait then retry.
Max. # of Consec. Collisions	The count of consecutive collisions as defined above.
Max/Avg Secs To Select Route	Time taken within the initiating node to select a new route.
Max/Avg Secs To Perform Route	Time taken to contact and lock the nodes on the new route and perform the rerouting process.
Avg Secs to Route a Conn:	Time to perform a reroute divided by the average number of connections in a bundle.
% of Collisions/Rrt Attempt	Another statistic derived from the number of collisions and the number of reroute attempts.

Table 1-63 Display Reroute Statistics (continued)

Statistic	Description
Max Secs To NOT find Route	Similar to “max secs to select a route” except that the algorithm finished and no route was found.
Number of Routes not found	Number of routes not found in the rerouting process. This parameter updates periodically as a heartbeat to check for activity.
# of Rrts with rrt req_bit set	Number connections awaiting reroute. If rrt_req bit is set, a reroute was not successful; or trunk deletions or loading additions mean connections must be rerouted. Rerouting clears the rrt_req bit.
Address of Forced Rrt Counts	NPC memory address for database information.
Max routes checked in search	Maximum number of PLNs examined in a search for a new route.
Max good rts checked in search	Maximum number of possible routes found before the search ended. The value should be 1.
# our lns rmvd from under us	Measure the number of changes to topology and loading that occurred while rerouting was in progress.
# lines rmvd out from under us	Same as above.

Figure 1-98 dsprrst—Display Reroute Statistics

```
sw197          TN    SuperUser       IGX 8420    9.2.a1    Apr. 7 1998  05:49 GMT

Conn. Routing Statistics LOC_DOMAIN
Number of Completed Routes:        0  Blocked by other st machines:       0
Number of Failed Routes:           0  Timeouts waiting for ACK/NACK:      0
Number of Collisions:              0  Timeouts in LOCKED state:           0
Max # of Consec Collisions:        0  Number of Routes Not found:         0
Max Secs To Select Route:      0.000  # of Rrts with rrt_req bit set:     0
Max Secs To Perform Route:     0.000  Address of Forced Rrt Counts: 313F9860
Max Bundle Size Routed:            0  Max routes checked in search:       0
Avg Secs To Select Route:      0.000  Max good rts checked in search:     0
Avg Secs To Perform Route      0.000  # nibs rmvd out from under us:      0
Avg Secs To Route a Conn:      0.000  # our lns rmvd from under us:       0
Avg Bundle Size Routed:            0  # lns rmvd from under us:           0
% of Collisions/Rrt Attempt:       0% Number of conid conflicts:          0
Max Secs To NOT find Route:    0.022  Number of LCON deroutes:            0
Times conns deletd while rtng:     0  Number of VLCON deroutes:           0

This Command: dsprrst

Continue?y

sw197          TN    SuperUser       IGX 8420    9.2.a1    Apr. 7 1998  05:50 GMT

Conn. Routing Statistics LOC_DOMAIN
# conns added to Rrt waitlist:     0  # no destination trunk:           0
# conns unroutable:                0  # lowest cost route found:        0
# Reroute_Line_Debug:        4000103  # lowest cost route not found:    0
# Reroute_Debug:            FFFFFFFF  # unsuccessful cache usage:       0
# Upd_via_info:                    0  # successful cache usage:         0
# diff rrt cons number:            0  # successful on-demand:           0
# hop count exceeded:              0
# cost exceeded:                   0
# delay exceeded:                  0
# open cell space too low:         0
# open packet space too low:       0
# open conid space too low:        0
# open GW LCN space too low:       0
# lowest cost path replaced:       0

Last Command: dsprrst

Next Command:
```

dspsig (Display signaling)

The **dspsig** command displays the current signaling state received at the node from the specified voice channel.

Attributes

Jobs	Log	Node	Lock
No	No	IGX	No

Associated Commands

cnfclnsigparm, **cnfrcvsig**, **dspclnsigparm**

Syntax

dspsig <start_channel>

<start_channel>	First voice channel in the format *slot.port*.

Function

This command displays the current signaling state received at the node from the specified voice channel. The status of the transmit and receive A and B signaling bits (for DS1 trunks) or A, B, C and D signaling bits (for E1 trunks) are displayed as a 0 or 1. The status of the bits (0 or 1) depends on the signaling type utilized on the connection displayed. The transmit direction of transmission is toward the remote node; the receive direction is toward the local circuit line.

The **dspsig** command can be used to verify the connection signaling type. Figure 1-99 illustrates a typical screen. If you compare the A/B bit states on-hook and off-hook with those shown in the **dspchcnf** command, you will note that the node passes signaling straight through. The signaling definition is only important for monitoring the on-hook/off-hook state and setting conditioning patterns.

Figure 1-99 dspsig—Display signaling

```
sw83           TN     SuperUser       IGX 8420    9.2      Aug. 1 1998  19:25 PST

                                Signalling Information
From 7.1     TXA-bit  TXBbit  TXCbit  TXDbit  RXA-bit RXBbit RXCbit RXDbit no_serv
7.1-15       1       1       0       1       1      1      0      1
7.17-31      1       1       0       1       1      1      0      1







Last Command: dspsig 7.1


Next Command:
```

dspslot (Display Slot)

The **dspslot** command displays system information associated with a specific card in the node.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

none

Syntax

dspslot <slot number>

<slot number>	Specifies the shelf slot number.

Function

This command displays system information associated with a specific card in the node. The information can help you debug card failures. When a card failure is reported to the Cisco TAC, the TAC engineer records the parameters for the associated card displayed by using **dspslot**.

The information displayed by the **dspslot** command is unique to the card and is used primarily by the controller card to supervise background system tasks. Table 1-64 lists the card parameters. Figure 1-100 illustrates a typical display—an FRP in this case.

Use this command to add information on a failed card when you return it. Print the screen or otherwise record the information and return it with the faulty card to Cisco.

Figure 1-100 dspslot—Display Slot

```
sw83           TN    SuperUser       IGX 8420    9.2      Aug. 1 1998  19:27 PST

Card Data Base for FRP card in slot 6  at address 30BD820C

  Logical Card        6                     Test in Prog        0
  Verify DB Flag      0                     Slft Res Abort      0
  Info Ptr            30B88C2C              Slft Abort          0
  Last Event          TEST_FREE             Last Test           BKGD_TEST
  Fail Inter          0                     FRP Test Fail       0
  Selftest Fail       0                     FRP Test Fail I     0
  Selftest Inter      0                     FRP Port Test Fail  0
  Selftest Timeout    0                     FRP Port Capacity   31
  Con Test Fail       0                     FRP Line Capable    1
  Red LED Flag        0                     FRP V35 Capable     0
  Restart Reason      Not maintained        FRP X21 Capable     0
  Selftest Results                          FRP NNI/CLLM Cap    1
                                            FRP CGW/ATFR Cap    1

Last Command: dspslot 6


Next Command:
```

Table 1-64 Slot Parameters You Can Display on Node

Item	Parameter	Description
1	Logical Card	This number represents the type of card.
2	Verify DB Flag	Verify database flag. Concerned with database and memory.
3	Info Ptr	Information pointer. Concerned with database and memory.
4	Last Event	This is the previous state of the card known to the NPC.
5	Fail Inter	Indicates intermittent card failure.
6	Selftest Fail	Indicates self-test fail condition.
7	Selftest Inter	Indicates intermittent self-test failure.
8	Selftest Timeout	Self-test routine timed out before completion.
9	Con Test Fail	Indicates failure of the test con command.
10	Red LED Flag	Indicates front panel FAIL LED on.
11	Restart Reason	Reason for last card reset.
12	Selftest Results	Results of last self-test for card.
13	Test in Prog	Indicates card test is in progress.
14	Slft Res Abort	Not used.
15	Slft Abort	Not used.
16	Card Stats Up	A “1” indicates statistics are being collected on this card.
17	Sib Pointer	Pointer to database concerning statistics.
18	Summary stats	Pointer to database concerning statistics.
19	Detailed stats	Pointer to database concerning statistics.

Table 1-64 Slot Parameters You Can Display on Node (continued)

Item	Parameter	Description
20	Bus Mastership	For BCC, this indicates whether this is the slave BCC. For other cards, this is not used.
21	Last Test	Last test performed on card in this slot.

dspslotstatcnf (Display Statistics Enabled for a BXM Card Slot)

The **dspslotstatcnf** command displays enabled statistics for where a BXM card resides.

Attributes

Jobs	Log	Node	Lock
No	Yes	BPX	Yes

Associated Commands

cnfslotstats

Syntax

dspslotstatcnf <slot>

<slot>	Specifies the slot where the BXM resides.

Function

This command displays the enabled BXM card slot statistics. These statistics are set by the **cnfslotstats** command, by Cisco WAN Manager, or by node features. See Figure 1-101 for possible statistics.

The Owner column shows what set the statistic, as follows:

- If the column shows Automatic, it was set by features.
- If the column shows the node name, it was is set by Cisco WAN Manager.
- If the column shows the name of the user, it was set with the **cnfslotstats** command.

Figure 1-101 dspslotstatcnf—Slot Statistics (BXM)

```
sw59          TN    SuperUser       BPX 15    9.2 Apr. 7 1998  14:02 GMT

Statistics Enabled on Slot 2

    Statistic                            Samples Interval Size Peaks  Owner
    ----------------------------------- ------- -------- ---- -----  ----------
 1) Standby PRBS Errors                       60        0    4  NONE  AUTO
 2) Rx Invalid Port Errs                      60        0    4  NONE  AUTO
 3) PollA Parity Errors                       60        0    4  NONE  AUTO
 4) PollB Parity Errors                       60        0    4  NONE  AUTO
 5) Bad Grant Errors                          60        0    4  NONE  AUTO
 6) Tx Bip 16 Errors                          60        0    4  NONE  AUTO
 7) Rx Bip 16 Errors                          60        0    4  NONE  AUTO
 8) Bframe parity Errors                      60        0    4  NONE  AUTO
 9) SIU phase Errors                          60        0    4  NONE  AUTO
10) Rx FIFO Sync Errors                       60        0    4  NONE  AUTO
11) Poll Clk Errors                           60        0    4  NONE  AUTO
12) CK 192 Errors                             60        0    4  NONE  AUTO
13) Monarch Specific Errors                   60        0    4  NONE  AUTO

This Command: dspslotstatcnf 2

Continue?
```

dspslotstathist (Display Statistics History for a BXM Card)

The **dspslotstathist** command displays a history of statistics enabled for a BXM card slot.

Attributes

Jobs	Log	Node	Lock
No	Yes	BPX	Yes

Associated Commands

cnfslotstats, **dspslotstatcnf**

Syntax

dspslotstathist <port>

<slot>	Specifies the slot.

Function

This command displays the data for the last five occurrences of the slot statistic. The statistic is selected from the list displayed when this command is first entered. Use the **dspslotstatcnf** to display the statistics enabled on the selected slot. Use **cnfslotstats** to enable a statistic.

Note You may have to enter owner “auto” or “user” in all capital letters.

dspstatmem (Display Statistics Memory Use)

The **dspstatmem** command displays memory usage for statistics collection.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	No

Associated Commands

none

Syntax

dspstatmem

Function

This command displays memory usage for statistics collection. It is intended for debugging statistics collection problems, not everyday use. The command shows the amount of controller card memory allocated by the user to statistics display (defaults to 650 Kbytes).

The memory occupied by USER is used for user-enabled statistics. Figure 1-102 illustrates a typical screen. The memory occupied by USER figure is that used by the Cisco WAN Manager user. Memory occupied by AUTO is that used by node features.

Figure 1-102 dspstatmem—Display Statistics Memory Usage

```
sw83           TN    SuperUser       IGX 8420    9.2      Aug. 1 1998  19:29 PST





User Configured Statistics Memory (In bytes)  = 624640

Memory Occupied by USER (In bytes) = 0

Memory Occupied by AUTO (In bytes) = 21584






Last Command: dspstatmem


Next Command:
```

dspswlog (display software error log)

Displays the software errors log. The log contains 12 entries, and when the log is full, additional errors overwrite the oldest entries. This command is not new to the command line interface, but has been modified in the 9.3.0 software release. The **dspswlog** command for this release displays contains non-fatal entries. Use the **dspabortlog** command to display a new log containing abort entries.

A lighted icon “SW” at the bottom of the command line interface indicates that a software error has been logged. Unrelated to this feature, but also at the bottom of the command line interface, the “CD” icon indicates a card or hardware error, while the “AB” icon indicates an abort error

SW AB CD Job 1

Syntax

dspswlog [<d> | <number> | <c>]

d	Displays the detailed version of the log, including stack dumps. Page through the detailed version of the log using the arrow keys or the Return key.
number	When an entry number is entered (found under the No. column), displays the detailed version of a specific entry in the log.
c	Clears the log. Optionally, you can use the **clrabortlog** command.

Related Commands

clrswlog, **dspabortlog**, **clrabortlog**

Attributes

Privilege	Jobs	Log	Node	Lock
Service	No	No	IGX, BPX	No

See Table 1-65 for a description of the fields displayed on the **dspswlog** screen.

Table 1-65 dspswlog—Field Descriptions

Field	Description
No.	Error entries in the table numbered from 1–12.
Type Error	The entry identifier. For **dspswlog**, the identifier is “error.” Occasionally, the identifier “BadType,” is displayed, indicating a problem within the table itself.
Number	The number that identifies a specific error problem.
Data (Hex)	A 4-byte field containing information that may be useful in solving a problem. It is different for every error number.

Table 1-65 dspswlog—Field Descriptions (continued)

Field	Description
PC (Hex)	Program Counter. The address of the place in memory where the software was running when the error was logged; this identifies where the problem was detected.
PROC	Process or Task. This field indicates which process was running when the problem occurred. Use the **dspprf** command to display all of the tasks.
SwRev	Switch software version operating on this node.
Date	Date of the error.
Time	Time of the error.

dsptcpparm (Display TCP Parameters)

The **dspftcpparm** command displays the TCP bandwidth throttle parameter.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

cnftcpparm

Syntax

dsptcpparm

Function

This command displays the TCP bandwidth throttle parameter. Figure 1-103 shows a typical display.

Figure 1-103 dsptcpparm—Display TCP Parameters

```
cc2            LAN   SuperUser       IGX 8430    9.2     Aug. 30 1998   11:42 PST

NWIP Bandwidth Throttle (Kbytes/sec):  32









Last Command: dsptcpparm


Next Command:
```

dsptrkcons (Display Trunk Connection Counts)

The **dsptrkcons** command displays the number of connections routed over the specified trunk. This command applies to physical and virtual trunks.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

dsptrkmcons, **dspplnmcons**

Syntax

dsptrkcons <line number>

<line number>	Trunk number.

Function

This command displays the total number of connections being carried by the specified trunk. The connections are summed for each terminating node in the network and lists the connection count for the transmit direction (out of the node).

This command is useful in determining the source of dropped packets in cases where the specified trunk is oversubscribed. Use the **dsptrks** command to list the trunks that originate at each node. Next, use the **dsptrkcons** to determine the number of connections (the more connections per trunk the greater the possibility of over-subscription). Then use the **dsprts** command to identify any through nodes (where the trunk is not terminated). Finally, look at the utilization factor for each of these lines using the **dsputl** and **dspdutl** commands. Figure 1-104 illustrates the **dsptrkcons** command display.

Figure 1-104 dsptrkcons—Display Trunk Connection Counts

```
batman         TN     SuperUser       BPX 15    9.2       Aug. 9 1998  15:57 GMT

Connection Counts For TRK 5.1

Src Node  Conns    Src Node  Conns    Src Node  Conns    Src Node  Conns
batman    1765







Last Command: dsptrkcons 5.1


Next Command:
```

dsptrkmcons (Display Trunk Connection Counts by Master Node)

The **dsptrkmcons** command displays the number of connections routed over the specified trunk (BNI) by the master node.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

dsptrkcons

Syntax

dsptrkmcons <line number>

<line number>	Specified trunk number. Note that in a BPX, the line number must include a port number.

Function

This command displays the total number of connections being carried by the specified trunk. Rather than showing the remote end of the connection, the display lists the connection and the node that owns that connections.

This command is useful in determining the source of dropped packets in cases where the specified trunk is oversubscribed. First, use the **dsptrkmcons** command to list the trunks that originate at each node (the more connections per trunk, the greater the possibility of over-subscription). Next, use the **dsprts** command to identify any through-nodes (on which the trunk is not terminated). Finally, look at the utilization for each of these lines by using the **dsputl** and **dspdutl** commands. Figure 1-105 illustrates the **dsptrkmcons** command display.

Figure 1-105 dsptrkmcons—Display Trunk Connection Counts by Master Node

```
sw81           TN    SuperUser       BPX 15    9.2    Aug. 26 1998 13:16 PST

Connection Counts For TRK 6.1

Mst Node  Conns    Mst Node  Conns    Mst Node  Conns    Mst Node  Conns
sw86      26









Last Command: dsptrkmcons 6.1

Next Command:
```

dsptrkstatcnf (Display Statistics Enabled for a Trunk)

The **dsptrkstatcnf** command displays the enabled statistics a physical or virtual trunk.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnftrkstats

Syntax

dsptrkstatcnf <line>

<line>	Specifies the trunk: *line* can have the form *slot*, *slot.port* or *slot.port.vtrk*. The format depends on whether the trunk card has one or more physical ports and whether the trunk is a virtual trunk.

Function

This command displays the statistics enabled for a trunk. It is intended for debugging statistics collection problems. It displays the trunk statistics set by the **cnftrkstats** command, by Cisco WAN Manager, or by node features. Figure 1-106 shows example statistics for a T3 ATM trunk. The Owner column shows the source of the specification. If the Owner column shows AUTO, the node's features determined the statistics. If the Owner column shows the name of the node, Cisco WAN Manager determined the statistics. If the Owner column shows USER, the **cnftrkstats** command was used to configure the statistics. The display may take up to four screens to display completely depending on statistics displayed.

Figure 1-106 dsptrkstatcnf—Display T3 Trunk Statistics Enabled (Screen 1)

```
sw81           TN    SuperUser       BPX 15    9.2 Oct. 22 1998 23:47 PST

Statistics Enabled on Trunk 1.1

     Statistic                            Samples Interval Size Peaks Owner
     ---------------------------------- ------- -------- ---- ----- ----------
  3) Out of Frames                             60        0    4  NONE AUTO
  4) Loss of Signal                            60        0    4  NONE AUTO
 29) Line Code Violation                       60        0    4  NONE AUTO
 32) Line Parity Errors                        60        0    4  NONE AUTO
 35) Path Parity Errors                        60        0    4  NONE AUTO
 41) BIP-8 Errors                              60        0    4  NONE AUTO
 46) HCS Errors                                60        0    4  NONE AUTO
 48) Tx Voice Overflow Drpd Cells              60        0    4  NONE AUTO
 49) Tx TS Overflow Drpd Cells                 60        0    4  NONE AUTO
 50) Tx NTS Overflow Drpd Cells                60        0    4  NONE AUTO
 51) Tx Hi-Pri Overflow Drpd Cells             60        0    4  NONE AUTO

This Command: dsptrkstatcnf 1.1


Continue? y


sw81           TN    SuperUser       BPX 15    9.2 Oct. 22 1998 23:48 PST

Statistics Enabled on Trunk 1.1

     Statistic                            Samples Interval Size Peaks Owner
     ---------------------------------- ------- -------- ---- ----- ----------
 52) Tx BData A Overflow Drpd Cells            60        0    4  NONE AUTO
 53) Tx BData B Overflow Drpd Cells            60        0    4  NONE AUTO
 98) Frame Sync Errors                         60        0    4  NONE AUTO
167) Tx CBR Overflow Drpd Cells                60        0    4  NONE AUTO
168) Tx VBR Overflow Drpd Cells                60        0    4  NONE AUTO
169) Tx ABR Overflow Drpd Cells                60        0    4  NONE AUTO




Last Command: dsptrkstatcnf 1.1


Next Command:
```

dsptrkstathist (Display Statistics History for a Trunk)

The **dsptrkstathist** command displays a history of configured statistics for a physical or virtual trunk.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

cnftrkstats, **dsptrkstatcnf**

Syntax

dsptrkstathist <trunk>

<trunk>	Specifies the trunk in one of the following formats: *slot* for a trunk card with one line *slot.port* for a trunk card with more than one line *slot.port.vtrk* for a virtual trunk

Function

The **dsptrkstathist** command is a statistics debugging command. It displays the data for the last five occurrences of the selected statistic. The available trunk statistics appear on screen upon entry of the **dsptrkstathist** command. (The **cnftrkstats** command enables individual statistics. The **dsptrkstatcnf** command displays the enabled statistics for a trunk.) Figure 1-107 displays a statistic history for virtual trunk 1.1.1. The statistic is TX ABR Overflow Dropped Cells. This is statistic number 169. The execution of **dsptrkstatcnf** shows as enabled for this trunk. (If a *disabled* statistic is selected, a message stating this appears above the command line prompt.) The entered bucket interval is 0 minutes, which means that only the preceding 60 seconds worth of gathered data for number 169 appears.

Note Enter the owner in all capital letters. You may have to enter owner “auto” in all capital letters.

Figure 1-107 dsptrkstathist—Display Trunk Statistics History BXM (BPX)

```
rogue          TN    Cisco           BPX 8620  9.3.10 July 14 2000 11:44 GMT

Virtual Interface Statistic Types

 7) Tx Voice Cells Served               32) Tx BData A Cells Discarded
 8) Tx TS Cells Served                  33) Tx BData B Cells Discarded
 9) Tx NTS Cells Served                 34) Tx CBR Cells Discarded
10) Tx Hi-Pri Cells Served              35) Tx ABR Cells Discarded
11) Tx BData A Cells Served             36) Tx VBR Cells Discarded
12) Tx BData B Cells Served             37) Egress NTS Cells Rx
19) Tx CBR Cells Served                 38) Egress Hi-Pri Cells Rx
20) Tx VBR Cells Served                 39) Egress Voice Cells Rx
21) Tx ABR Cells Served                 40) Egress TS Cells Rx
28) Tx NTS Cells Discarded              41) Egress BData A Cells Rx
29) Tx Hi-Pri Cells Discarded           42) Egress BData B Cells Rx
30) Tx Voice Cells Discarded            43) Egress CBR Cells Rx
31) Tx TS Cells Discarded               44) Egress ABR Cells Rx

This Command: dsptrkstathist 12.2


Continue?

rogue          TN    Cisco           BPX 8620  9.3.10 July 14 2000 11:44 GMT

Virtual Interface Statistic Types

45) Egress VBR Cells Rx                 58) Tx Q10 Cells Served
46) Total Cells Tx from port            59) Tx Q10 Cells Discarded
47) Cells RX with CLP0                  60) Egress Q10 Cells Rx
48) Cells Rx with CLP1                  61) Tx Q11 Cells Served
49) Cells RX Discard with CLP0          62) Tx Q11 Cells Discarded
50) Cells RX Discard with CLP1          63) Egress Q11 Cells Rx
51) Cells TX with CLP0                  64) Tx Q12 Cells Served
52) Cells TX with CLP1                  65) Tx Q12 Cells Discarded
53) BXM: Total Cells RX                 66) Egress Q12 Cells Rx
54) Ingress OAM Cell Count              67) Tx Q13 Cells Served
55) Egress OAM Cell Count               68) Tx Q13 Cells Discarded
56) Ingress RM cell count               69) Egress Q13 Cells Rx
57) Egress RM cell count                70) Tx Q14 Cells Served

This Command: dsptrkstathist 12.2


Continue?

rogue          TN    Cisco           BPX 8620  9.3.10 July 14 2000 11:44 GMT

Virtual Interface Statistic Types

71) Tx Q14 Cells Discarded
72) Egress Q14 Cells Rx
73) Tx Q15 Cells Served
74) Tx Q15 Cells Discarded
75) Egress Q15 Cells Rx

This Command: dsptrkstathist 12.2


Statistic Type:
```

Figure 1-108 dsptrkstathist—Display Trunk Statistics History UXM (IGX)

```
sw144          TN    Cisco           IGX 8420  9.3.10 Date/Time Not Set

Virtual Interface Statistic Types

 1) QBIN: Voice Cells Tx to line        14) QBIN: Tx BData A Cells Discarded
 2) QBIN: TimeStamped Cells Tx to ln    15) QBIN: Tx BData B Cells Discarded
 3) QBIN: NTS Cells Tx to line          16) QBIN: Tx CBR Cells Discarded
 4) QBIN: Hi-Pri Cells Tx to line       17) QBIN: Tx ABR Cells Discarded
 5) QBIN: BData A Cells Tx to line      18) QBIN: Tx nrt-VBR Cells Discarded
 6) QBIN: BData B Cells Tx to line      19) QBIN: Tx NTS Cells Received
 7) QBIN: Tx CBR Cells Served           20) QBIN: Tx Hi-Pri Cells Received
 8) QBIN: Tx nrt-VBR Cells Served       21) QBIN: Tx Voice Cells Received
 9) QBIN: Tx ABR Cells Served           22) QBIN: Tx TS Cells Received
10) QBIN: Tx NTS Cells Discarded        23) QBIN: Tx BData A Cells Received
11) QBIN: Tx Hi-Pri Cells Discarded     24) QBIN: Tx BData B Cells Received
12) QBIN: Tx Voice Cells Discarded      25) QBIN: Tx CBR Cells Received
13) QBIN: Tx TS Cells Discarded         26) QBIN: Tx ABR Cells Received

This Command: dsptrkstathist 4.2

Continue?

sw144          TN    Cisco           IGX 8420  9.3.10 Date/Time Not Set

Virtual Interface Statistic Types

27) QBIN: Tx nrt-VBR Cells Received     40) CGW: Packets Rx From Network
28) VI: Cells rcvd w/CLP=1              41) CGW: Cells Tx to Line
29) VI: OAM cells received              42) CGW: NIW Frms Relayed to Line
30) VI: Cells tx w/CLP=1                43) CGW: SIW Frms Relayed to Line
31) VI: Cells received w/CLP=0          44) CGW: Aborted Frames Tx to Line
32) VI: Cells discarded w/CLP=0         45) CGW: Dscd Pkts
33) VI: Cells discarded w/CLP=1         46) CGW: 0-Length Frms Rx from
Network
34) VI: Cells transmitted w/CLP=0       47) CGW: Bd CRC16 Frms Rx from
Network
35) VI: OAM cells transmitted           48) CGW: Bd Lngth Frms Rx from
Network
36) VI: RM cells received               49) CGW: OAM RTD Cells Tx
37) VI: RM cells transmitted            54) CGW: Packets Tx to Network
38) VI: Cells transmitted               55) CGW: Cells Rx from Line
39) VI: Cells received                  56) CGW: NIW Frms Relayed from Line

This Command: dsptrkstathist 4.2

Continue?

sw144          TN    Cisco           IGX 8420  9.3.10 Date/Time Not Set

Virtual Interface Statistic Types

57) CGW: SIW Frms Relayed from Line     78) QBIN: Tx Q11 Cells Received
58) CGW: Abrt Frms                      79) QBIN: Tx Q12 Cells Served
59) CGW: Dscd Cells                     80) QBIN: Tx Q12 Cells Discarded
60) CGW: 0-Lngth Frms Rx from Line      81) QBIN: Tx Q12 Cells Received
61) CGW: Bd CRC32 Frms Rx from Line     82) QBIN: Tx Q13 Cells Served
62) CGW: Bd Lngth Frms Rx from Line     83) QBIN: Tx Q13 Cells Discarded
63) CGW: OAM RTD Cells Rx               84) QBIN: Tx Q13 Cells Received
64) CGW: OAM Invalid OAM Cells Rx       85) QBIN: Tx Q14 Cells Served
73) QBIN: Tx Q10 Cells Served           86) QBIN: Tx Q14 Cells Discarded
74) QBIN: Tx Q10 Cells Discarded        87) QBIN: Tx Q14 Cells Received
75) QBIN: Tx Q10 Cells Received         88) QBIN: Tx Q15 Cells Served
```

```
76) QBIN: Tx Q11 Cells Served          89) QBIN: Tx Q15 Cells Discarded
77) QBIN: Tx Q11 Cells Discarded       90) QBIN: Tx Q15 Cells Received

This Command: dsptrkstathist 4.2

Statistic Type:
```

dsputl (Display Utilization)

The **dsputl** command displays the utilization factor for all voice connections on a circuit line.

Attributes

Jobs	Log	Node	Lock
No	No	IGX	Yes

Associated Commands

dspdutl

Syntax

dsputl <bslot> [clear]

<bslot>	Specifies the shelf back slot number of the circuit line.
[clear]	Directs the controller card to clear the utilization counters after being displayed.

Function

This command displays the actual percentage utilization for all voice connections on a single circuit line specified by the back slot (**bslot**) number. The percentage is calculated by dividing the number of packets transmitted by the total number of packets allocated to the specified channel. Only transmit packet rates are used. If the percentage of actual utilization exceeds the configured utilization the channel appears in reverse video.

Figure 1-109 illustrates a typical display. In this example, the connections from 11.1 to 11.11 use VAD and the connections from 11.12 to 11.17 do not. The connections using VAD do not use any network bandwidth (0 utilization) until the connection is used. The other connections utilize the full bandwidth (100% utilization) even though they may be idle.

Use the **dspdutl** command to display utilization for data channels.

Figure 1-109 dsputl—Display Voice Channel Utilization

```
gamma            TRM       SuperUser        Rev:  9.2  Aug. 14 1998  16:36 PDT

Percentage utilization        Last Cleared: Date/Time Not Set         Snapshot

CLN    1  2  3  4  5  6  7  8  9 10 11 12 13 14 15

11     0  0  0  0  0  0  0  0  0  0  0  0 99 99 99


CLN   16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

11       99



Last Command: dsputl 11

Next Command:
```

getfwrev (Get Firmware Revision)

The **getfwrev** command gets and loads a firmware image:

- From Cisco WAN Manager, or a remote node.
- To the specified card on the specified node, or on all reachable nodes.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

burnfwrev, **dspfwrev**, **dspdnld**

Syntax

getfwrev <card type> <image name> <nodename>

<card type>	Specifies the card on which to load the revision.
<image name>	Specifies the name assigned to the firmware revision. Image names are generally in all capital letters and are case-sensitive when being entered.
<nodename>	Specifies the node on which to load the revision.

Function

This command gets and loads a firmware revision image into the specified node's NPC memory. This firmware image can then be downloaded to specific interface cards within the node with the **burnfwrev** command. The firmware image must be already loaded into the Cisco WAN Manager or Cisco WAN Manager terminal before using this command.

When the command is first entered, the status is temporarily “Unavailable” while the node attempts to locate the source of the firmware image. Once the download begins, a list of all of the files that make up the image is displayed and as the downloading progresses, the address of the file is updated.

- **getfwrev a.b.cd *—**Loads firmware revision a.b.cd at all reachable nodes
- **getfwrev BNI-E3 a.b.cd nodename**—Loads firmware revision a.b.cd on the BNI-E3 card at one node only (nodename specifies the node).
- **getfwrev 0.0**—Clears a firmware revision image from NPC memory. Should be issued after every firmware download to clear the NPC memory.
- **getfwrev BNI-E3 0.0 nodename**—Clears a firmware revision image from the BNI-E3 card at one node only (nodename specifies the node).

Caution This command is not to be confused with **loadrev**. The **loadrev** command loads system software, not firmware.

killuser (Log Out a User)

The **killuser** command logs out a user.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

none

Syntax

killuser <user number>

<user number>	Specifies the number of the user to log out.

Function

This command logs out a user. The **killuser** screen in Figure 1-110 displays a numbered list of users. The number is the argument that **killuser** takes. The display indicates your user number so that you do not log out yourself.

Figure 1-110 killuser—Kill User

```
sw83          TN    SuperUser       IGX 8420    9.2    Dec. 9 1998  00:11 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) SuperUser   < You  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           none
 10 VT_2 VT           none
 11 VT_3 VT           none
 12 VT_4 VT           none


This Command: killuser


Please Enter User Number:
```

loadcnf (Load Configuration)

The **loadcnf** command loads a configuration image from Cisco WAN Manager to a node.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX, IGX/AF	Yes

Associated Commands

dspcnf, **runcnf**, **savecnf**

Syntax

loadcnf <backup_id | clear> <node_name> <source_SV_node>

<backup_id >	Specifies the name of the backup configuration file to be loaded. Configuration names are case-sensitive.
<clear>	Specifies that the control card buffer area used for loading a configuration be cleared.
<node name>	Specifies the target node where the backup configuration file is to be loaded.
<source_SV_node>	Specifies the node connected to the Cisco WAN Manager where the configuration file *backup_id* resides.

Function

This command causes a saved network configuration file to be downloaded from Cisco WAN Manager to one node or all nodes. (See **savecnf**.) The configuration image downloaded is temporarily stored in a buffer area in a node's controller card memory. The process runs in the background and may take several minutes if the configuration file is large. Although loaded, the configuration is not yet restored. The configuration is restored to the controller card's BRAM memory using the **runcnf** command.

After loading and restoring a network configuration, the control card buffer area used for this purpose should be cleared so it is available for other downloading processes, such as that of firmware. To clear the buffer area, execute **loadcnf** with the *clear* parameter specified instead of *backup_id*. Specify the buffer of an individual node with *node_name* or all nodes with *. For the purpose of clearing the buffer area, do not specify the *source_SV_node* parameter.

To execute this command on an IGX/AF interface shelf, telnet to the shelf or use a control terminal attached to the shelf.

loadrev (Load Revision)

The **loadrev** command loads a secondary system software revision image from Cisco WAN Manager into a node.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX, IGX/AF	Yes

Associated Commands

runrev, **dsprevs**, **cnfdlparm, upggrp**

Syntax

loadrev <revision> <node_name | group_name | *>

<revision>	Specifies the revision level of the system software file to be loaded.
<node_name>	Specifies the target node where the secondary revision is to be loaded.
<group_name>	Specifies a subset of nodes in the network.
<*>	Specifies all nodes in the network.

Function

This command loads the secondary revision system software for the specified nodes. The secondary revision system software is the code that is loaded onto a controller card but is not being run. Use the **runrev** command (after you have loaded a revision with **loadrev**) to make the secondary revision the primary revision. The primary revision then becomes the secondary.

Examples of this command:

- **loadrev a.b.cd ***—Loads revision a.b.cd at all reachable nodes.
- **loadrev a.b.cd nodename**—Loads revision a.b.cd at nodename only
- **loadrev 0.0**.**—**Clears a software revision image from controller memory. You should issue this command after every software download to clear the controller memory.

After entering the command, the system responds with the following:

```
Enter Rev Number:
```

A prompt is issued if the user runs the **loadrev** command during a time when statistics collection is enabled. If the user selects “yes,” statistics collection is disabled before the **loadrev** command is executed.

Use the **dsprevs** command to view the software revisions that are currently loaded in the controller memory. Use the **dspdnld** command to display a running picture of the download procedure status once it has begun. The **runrev** command also displays the lowest revision running in the network.

Caution Do not confuse **loadrev** with **getfwrev**. The **getfwrev** command loads firmware, not system software.

prtcderrs (Print Card Errors)

The **prtcderrs** command prints out detailed card failure information.

Attributes

Jobs	Log	Node	Lock
Yes	No	IGX, BPX	Yes

Associated Commands

clrcderrs, **dspcderrs**

Syntax

prtcderrs [<slot>]

<slot >	Specifies the shelf slot where the selected card is installed.

Function

Prints a history of card failures associated with a specified slot on the network printer. If no argument is specified, a summary is printed, indicating the slots that have failures recorded against them. Refer to **dspcderrs** command for an example of a typical card error record that might be printed.

rrtcon (Reroute Connection)

The **rrtcon** command is used to manually reroute one or more connections.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX	Yes

Associated Commands

drtop

Syntax

rrtcon <group | channel(s) | *>

<group | channel(s) | *>:	Specifies a group, a channel, or a range of channels to be rerouted. A * specifies all locally owned groups and connections.

Function

This command forces a group, channel, or range of channels to be rerouted. If a free-routing connection is rerouted by the system for whatever reason, it will not automatically return to its original route when the trouble clears. This may leave the connection on a path that is not the most direct or cost effective.

You can use **rrtcon** to force a reroute that will likely put the connection back to its original route if that route is available. Over time, many routes may need to be rerouted back to their original paths. In this case, use the "*" parameter with **rrtcon** on the node where you originally executed it to reroute all connections.

To use this command you must first vt to the node that owns the connection (local node). If not at the local node, the system displays "This node is not owner of the connection(s)."

There is no provision for specifying a route. The node determines the connection route according to the same rules that are used when adding a new connection. If no network bandwidth is available for rerouting the connection, the node marks the connection as failed.

Caution Using this command on a connection that is in service should be done with some discretion because the reroute interrupts service for as long as it takes to reroute the connection.

rststats (Reset Statistics Collection Time)

The **rststats** command resets the statistics collection time for the **tststats** command. Executing **rststats** clears all statistics. When you enter it, a prompt warns you that the command clears all statistics and asks if you want to proceed.

Attributes

Jobs	Log	Node	Lock
Yes	No	IGX, BPX	Yes

Associated Commands

tststats

Syntax

rststats

Function

This command resets the collection time for the **tststats** command. The **tststats** command displays a test statistics summary. Before there will be any meaningful statistics, the **tstcon** command must be performed on one or more network connections. Refer to the *Cisco WAN Switching Command Reference* for information on the **tstcon** command. Figure 1-111 illustrates the system response.

Figure 1-111 rststats—Reset Statistics Collection Time

```
alpha32        LAN   SuperUser       IGX 8430      9.2     Aug. 30 1998 13:35 PST










This Command: rststats

Warning: This command clears all statistics
Continue?
```

runcnf (Run Configuration)

The **runcnf** command restores a network configuration image at one or all nodes.

Attributes

Jobs	Log	Node	Lock
No	Yes	IGX, BPX	Yes

Associated Commands

savecnf, **loadcnf**, **clrcnf**

Syntax

runcnf <backup_id> <node_name>

<backup_id>	Specifies the name of the configuration image loaded from Cisco WAN Manager. Configuration names are case-sensitive.
<node_name>	Specifies the node name to receive the configuration. An asterisk (*) specifies all nodes.

Function

This command restores the specified configuration to the controller card's BRAM memory and overwrites the current configuration. Once restored, the specified node (or all nodes) rebuilds with the restored configuration image. To execute this command on an IGX/AF interface shelf, telnet to the shelf or use a control terminal attached to the shelf.

This command is usually run after a previous configuration has been lost. If doubts exist about the state of the configuration at other nodes in the network, load the configuration into all nodes by specifying "*" for the node name. The new configuration must have previously been loaded into the controller buffer area with the **loadcnf** command.

Caution All network nodes must be run with the same configuration.

The system may display two warnings in response to the **runcnf** command:

1. When single node specified:
   - Warning—node_name not reachable. Continue? Y/N.
   - Warning—node_name does not have the specified configuration. Continue? Y/N.
2. When all nodes specified:
   - Warning—all nodes not reachable. Continue? Y/N.
   - Warning—all nodes do not have the specified configuration. Continue? Y/N.

If a single node is not reachable, responding with a "Y" does not affect the operation of the network. If node(s) do not all have the specified configuration or all are unreachable, it is not recommended that you continue until after the problem is resolved.

runrev (Run Revision)

The **runrev** command runs a specific revision of the system software at a node.

Attributes

Jobs: No   Log: Yes   Lock: Yes   Node Type: IGX, BPX

Associated Commands

dsprevs, **loadrev**, **cnfdlparm, upggrp**

Syntax

runrev <revision> <node_name | group_name | *>

<revision>	Identifies the revision you want to run.
<node_name>	Specifies the node name to rebuild with a new configuration.
<group_name>	Specifies a subset of nodes in the network.
*	Specifies all nodes in the network.

Function

This command sets the primary revision for the specified nodes. The primary software revision is the one that is actively controlling node operation. You can also load a non-active secondary revision that differs from the primary revision running in the controller. To set the primary software revision, enter:

- **runrev a.b.cd ***—To run revision a.b.cd at all reachable nodes.

  or

- **runrev a.b.cd nodename**—To run revision a.b.cd at a single node (nodename) only.

After entering the command, the system responds with “Enter Rev Number.” Use the **dsprevs** command to determine which revision(s)—primary and secondary—are available on the node. The **runrev** command also displays the lowest revision running in the network. The **runrev** command will be ignored if the required revision is not present on the node.

You may need to load the new revision onto the Cisco WAN Manager terminal and then use **loadrev** command to download the new software image into the standby controller before you issue the **runrev** command. If you enter a revision number that does not exist at the node, the system displays the message

“Warning—the node does not have the specified revision. Continue? Y/N”

If statistics collection is enabled at the time the **runrev** command is issued, a prompt is displayed, allowing the user to disable collection. If the user selects “yes,” statistics collection is disabled.

Caution All network nodes typically should be run with the same software revision to ensure normal network operation.

savecnf (Save Configuration)

The **savecnf** command saves a configuration image on a Cisco WAN Manager workstation disk.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX, BPX, IGX/AF	Yes

Associated Commands

loadcnf, **runcnf**, **clrcnf**

Syntax

savecnf <backup_id | clear> <node_name> <dest_SV_node> [<dest_SV_ip>]

<backup_id>	Specifies the name of a configuration to be saved on Cisco WAN Manager. The Backup ID must be 1–8 alphanumeric characters with the first character being alphabetic. Configuration names are case-sensitive.
<clear>	Specifies that the buffer area should be cleared.
<node_name>	Specifies the node name to save configuration on. An * may be specified to indicate all nodes.
<dest_SV_node>	Specifies the node name where Cisco WAN Manager is connected and is to receive the specified backup_id.
<dest_SV_IP>	For IGX/AF interface shelves only, this optional specification is the IP address of the Cisco WAN Manager that is to receive the configuration image.

Function

The **savecnf** command has two possible applications. It saves all the configurations for the nodes in a routing network, or it saves the configuration of one IGX/AF interface shelf to a specific Cisco WAN Manager workstation. Once saved, you can restore the configuration to BRAM by using the **loadcnf** and **runcnf** commands. You should execute **savecnf** in the following situations:

- After making any configuration changes in a network
- Before upgrading to a new system software release

Execution on a Routing Node

In a routing network, **savecnf** saves a configuration image for one node or all routing nodes (*node_name* = *) on the Cisco WAN Manager workstation specified by *dest_SV_node*.

Execution on an IGX/AF Interface Shelf

To execute **savecnf** on an IGX/AF, either telnet to the shelf or use a control terminal attached to it: **savecnf** saves a configuration image of only the current shelf. The image is stored on the workstation with the IP address in the parameter *dest_SV_ip*. (In a routing network, *dest_SV_ip* is not necessary.) Note that *node_name* and *dest_SV_node* must *both* be the name of the shelf. The IP address of the destination Cisco WAN Manager workstation uniquely identifies where to store the configuration image.

tststats (Test Statistics)

The **tststats** command displays a summary of the test statistics that result from performing a **tstcon** command on various network connections.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

tstcon

Syntax

tststats [clear]

[clear]	Specifies that the test statistics buffers be cleared.

Function

Before **tststats** displays any meaningful statistics, the **tstcon** command must run on one or more network connections. Refer to the *Cisco WAN Switching Command Reference* for information on the **tstcon** command. The following are displayed for voice, data, and Frame Relay connections.

- Tests Completed, Passed, Failed, and Aborted.
- Failure data per failed connection (applies only to voice connections).
- Slot.channel—Indicates which connection has failed.
- Good reads—Indicates number of good reads on the test failure.
- Bad reads—Indicates number of bad reads on the test failure.

Figure 1-112 illustrates a typical test statistics display.

Note The **tstcon** command should have run before you enter **tststats**.

Figure 1-112 tststats—Display Test Statistics

```
sw150          TN    SuperUser       IGX 8420    9.2      Aug. 1 1998  21:54 GMT

Connection Test results since: Date/Time Not Set

Type      Total      Passed      Failed      Aborted
Voice      0          0           0           0
Data       0          0           0           0
Fr Relay   0          0           0           0




Last Command: tststats


Next Command:
```

tstbadubus (test NTM corruption problem)

You can use the **tstbadubus** command to test an NTM corruption problem. It can be used any time you encounter a possible cell drop problem. Issue the **tstbadubus** command to make sure the problem is not caused by the UBU allocation.

Attributes

Jobs	Log	Node	Lock
Yes	Yes	IGX	Yes

Associated Commands

dspbusbw, cnfbusbw

Syntax

tstbadubus

Function

The **tstbadubus** command checks every allocated UBU to see if the above problem exists. If an allocation problem is detected, the falsely allocated UBUs will be displayed.

Tests the NTM-UXM/NPM UBU corruption problem.

The NTM card has been known to corrupt Lane 1 of its previous UBU. But it affects only the cells, not FastPackets. Thus it may corrupt data for the UXM card (cells) and NPM (AAL5 cells) if their UBUs are located in front of the one for the NTM card.

For example, if UBU 2 is used by the NTM, the cells (not FastPackets) in Lane 1 of UBU 1 will be corrupted. Because the UXM and NPM are the only cards using the cells in the bus, the UBU immediately before the one used by NTM cannot be allocated to the UXM or NPM.

The UBU allocation software will not assign UBUs for a UXM and an NPM card, if it is next to the one for NTM (to avoid the problem mentioned above).

The **tstbadubus** command checks every allocated UBU to see if the above problem exists. If an allocation problem is detected, the falsely allocated UBUs will be displayed.

Workaround

If the **tstbadubus** screen shows something similar to the screen in Example 1, then reallocating the UBU to slot 8 may cure the problem.

Issue the **dspbusbw** ***<8>*** command to see how may UBUs are currently allocated to slot 8. If the allocated UBU is 10, then always add one more UBU to the card. Use **cnfbusbw** *<8> <11>* to allocate 11 UBUs to slot 8. Most of the time, this change can remove the corruption condition.

If the problem persists, then add two more UBUs to the card. The idea is that by adding one or two more UBUs to the card, the UBU locations to be allocated change, which may cure the problem. Reallocating one or two fewer UBUs may also work.

Full Name

Test NTM corruption problem

Syntax

tstbadubus

Related Commands

dspbusbw, cnfbusbw

Example 1

tstbadubus

Description

The 24th UBU in page 3 was “badly” allocated (causing corruption). It is allocated to the NTM located at slot 4, as shown in Figure 1-113. This UBU corrupts the UBU allocated to the UXM located at slot 8. A cell drop will be expected for slot 8 due to the corruption.

Figure 1-113 tstbadubus System Response

```
sw152          TRM   SuperUser       IGX 8420  9.2.w3    Apr. 16 1999 15:13 GMT

NTM-UXM UBU Corruption Test

Page UBU  NTM  UXM  Page UBU  NTM  UXM  Page UBU  NTM  UXM  Page UBU  NTM  UXM

 3   24    4    8






Total   1 Corrupted UBUs detected

Last Command: tstbadubus
```

upgdlogcd (upgrade logical card database)

Use the **upgdlogcd** command to manually upgrade the logical card database when upgrading from a BXM card to a BXM-E card. This command should be used in conjunction with the **cnfnodeparm** command.

1. Use the **cnfnodeparm** command; set the auto BXM upgrade parameter to N, specifying that you do not want the logical card database to be upgraded automatically when the new BXM-E card replaces the BXM card. The default value for the parameter auto BXM upgrade is N.
2. Replace the BXM card with the BXM-E card.
3. Use the **upgdlogcd** command to manually upgrade the logical card database on the active slot.

Attributes

Jobs	Log	Node	Lock
No	No	BPX	Yes

Function

Upgrading the logical card database manually instead of automatically allows you to easily switch back to the legacy card *before* the **upgdlogcd** command is executed. Note that, by default, the **cnfnodeparm** parameter auto BXM upgrade is set to Y. Using this default setting, the logical card database is automatically upgraded.

Refer to the *BPX 8600 Installation and Configuration Guide* for a list of upgrade options and procedures.

Associated Commands

cnfnodeparm, cnfcdparm

Syntax

upgdlogcd <log_card_num>

log_card_num	Specifies the logical card number; for example, **upgdlogcd 6** upgrades the logical card database on the active BXM-E in slot 6.

Example 1

cnfnodeparm 54 n

Description

Set the auto BXM upgrade parameter to N, specifying that you do not want the logical card database to be upgraded automatically when the new BXM-E card replaces the BXM card.

Example 1-1 cnfnodeparm—Set the Auto BXM Upgrade Parameter to N

```
w116          TN    StrataCom       BPX 8620  9.3.0S    Feb. 29 2000 16:37 GMT

1  Update Initial Delay   [ 5000] (D)   16 Stats Memory (x 100KB) [  132] (D)
2  Update Per-Node Delay  [30000] (D)   17 Standby Update Timer   [   10] (D)
3  Comm-Break Test Delay  [30000] (D)   18 Stby Updts Per Pass    [   50] (D)
4  Comm-Break Test Offset [   10] (D)   19 Gateway ID Timer       [   30] (D)
5  Network Timeout Period [ 1700] (D)   20 GLCON Alloc Timer      [   30] (D)
6  Network Inter-p Period [ 4000] (D)   21 Comm Fail Delay        [   60] (D)
7  NW Sliding Window Size [    1] (D)   22 Nw Hdlr Timer (msec)   [   50] (D)
8  Num Normal Timeouts    [    7] (D)   23 SAR CC Transmit Rate   [  560] (D)
9  Num Inter-p Timeouts   [    3] (D)   24 SAR High Transmit Rate [  280] (D)
10 Num Satellite Timeouts [    6] (D)   25 SAR Low Transmit Rate  [   56] (D)
11 Num Blind Timeouts     [    4] (D)   26 SAR VRAM Cngestn Limit [ 7680] (D)
12 Num CB Msg Timeouts    [    5] (D)   27 SAR VRAM Cell Discard  [  256] (D)
13 Comm Fail Interval     [10000] (D)   28 ASM Card Cnfged        [    Y] (Y/N)
14 Comm Fail Multiplier   [    3] (D)   29 TFTP Grant Delay (sec) [    1] (D)
15 CC Redundancy Cnfged   [    Y] (Y/N) 30 TFTP ACK Timeout (sec) [   10] (D)

This Command: cnfnodeparm


sw116          TN    StrataCom       BPX 8620  9.3.0S    Feb. 29 2000 16:37 GMT

1  Update Initial Delay   [ 5000] (D)   16 Stats Memory (x 100KB) [  132] (D)
2  Update Per-Node Delay  [30000] (D)   17 Standby Update Timer   [   10] (D)
3  Comm-Break Test Delay  [30000] (D)   18 Stby Updts Per Pass    [   50] (D)
4  Comm-Break Test Offset [   10] (D)   19 Gateway ID Timer       [   30] (D)
5  Network Timeout Period [ 1700] (D)   20 GLCON Alloc Timer      [   30] (D)
6  Network Inter-p Period [ 4000] (D)   21 Comm Fail Delay        [   60] (D)
7  NW Sliding Window Size [    1] (D)   22 Nw Hdlr Timer (msec)   [   50] (D)
8  Num Normal Timeouts    [    7] (D)   23 SAR CC Transmit Rate   [  560] (D)
9  Num Inter-p Timeouts   [    3] (D)   24 SAR High Transmit Rate [  280] (D)
10 Num Satellite Timeouts [    6] (D)   25 SAR Low Transmit Rate  [   56] (D)
11 Num Blind Timeouts     [    4] (D)   26 SAR VRAM Cngestn Limit [ 7680] (D)
12 Num CB Msg Timeouts    [    5] (D)   27 SAR VRAM Cell Discard  [  256] (D)
13 Comm Fail Interval     [10000] (D)   28 ASM Card Cnfged        [    Y] (Y/N)
14 Comm Fail Multiplier   [    3] (D)   29 TFTP Grant Delay (sec) [    1] (D)
15 CC Redundancy Cnfged   [    Y] (Y/N) 30 TFTP ACK Timeout (sec) [   10] (D)

This Command: cnfnodeparm


Continue? y
sw116          TN    StrataCom       BPX 8620  9.3.0S    Feb. 29 2000 16:38 GMT

31 TFTP Write Retries     [    3] (D)   46 Max Htls Rebuild Count [  100] (D)
32 SNMP Event logging     [    Y] (Y/N) 47 Htls Counter Reset Time[ 1000] (D)
33 Job Lock Timeout       [   60] (D)   48 Send A-bit early        [    N] (Y/N)
34 Max Via LCONs          [50000] (D)   49 A-bit Tmr Multiplier  M [    0] (D)
35 Max Blind Segment Size [ 3570] (D)   50 A-bit Tmr Granularity N [    3] (D)
36 Max XmtMemBlks per NIB [ 3000] (D)   51 FBTC with PPDPolicing  [    N] (Y/N)
37 Max Mem on Stby Q (%)  [   33] (D)   52 CommBrk Hop Weight     [   25] (D)
38 Stat Config Proc Cnt   [ 1000] (D)   53 CB Fail Penalty Hops   [    2] (D)
39 Stat Config Proc Delay [ 2000] (D)   54 Auto BXM upgrade       [    Y] (Y/N)
40 Enable Degraded Mode   [    Y] (Y/N)
41 Trk Cell Rtng Restrict [    Y] (Y/N)
42 Enable Feeder Alert    [    N] (Y/N)
43 Reroute on Comm Fail   [    N] (Y/N)
44 Auto Switch on Degrade [    Y] (Y/N)
45 Max Degraded Aborts    [  100] (D)

This Command: cnfnodeparm
```

```
Enter parameter index: 54
Enter 'Yes' or 'No': n

sw116          TN    StrataCom       BPX 8620  9.3.0S    Feb. 29 2000 16:39 GMT

31 TFTP Write Retries     [    3] (D)   46 Max Htls Rebuild Count [  100] (D)
32 SNMP Event logging     [    Y] (Y/N) 47 Htls Counter Reset Time[ 1000] (D)
33 Job Lock Timeout       [   60] (D)   48 Send A-bit early        [    N] (Y/N)
34 Max Via LCONs          [50000] (D)   49 A-bit Tmr Multiplier  M [    0] (D)
35 Max Blind Segment Size [ 3570] (D)   50 A-bit Tmr Granularity N [    3] (D)
36 Max XmtMemBlks per NIB [ 3000] (D)   51 FBTC with PPDPolicing  [    N] (Y/N)
37 Max Mem on Stby Q (%)  [   33] (D)   52 CommBrk Hop Weight     [   25] (D)
38 Stat Config Proc Cnt   [ 1000] (D)   53 CB Fail Penalty Hops   [    2] (D)
39 Stat Config Proc Delay [ 2000] (D)   54 Auto BXM upgrade       [    N] (Y/N)
40 Enable Degraded Mode   [    Y] (Y/N)
41 Trk Cell Rtng Restrict [    Y] (Y/N)
42 Enable Feeder Alert    [    N] (Y/N)
43 Reroute on Comm Fail   [    N] (Y/N)
44 Auto Switch on Degrade [    Y] (Y/N)
45 Max Degraded Aborts    [  100] (D)

Last Command: cnfnodeparm 54 n
```

Example 2

upgdlogcd 6

Description

Manually upgrade the logical card database on the BXM-E3 in slot 6.

Example 1-2 upgdlogcd—Upgrade the Logical Card Database

```
sw116          TN    StrataCom       BPX 8620  9.3.0S    Feb. 29 2000 16:24 GMT

Missing Cards: 1 BCC

   FrontCard    BackCard                        FrontCard    BackCard
   Type    Rev  Type  Rev   Status              Type    Rev  Type  Rev   Status
1  BNI-T3  CHM  T3-3  BE    Standby         9   BNI-155 BDM  Empty       Standby
2  Empty                                    10  Empty
3  Empty                                    11  Empty
4  ASI-T3  CXF  T3-2  BE    Standby-T       12  BNI-T3  CFM  T3-3  BE    Active
5  BNI-T3  CEM  T3-3  FL    Active          13  BNI-T3  CFM  T3-3  BE    Active
6 BXM-E3  FB01 TE3-12BA    Active          14 ASI-155 HDC  MMF-2 AB    Active
7  BCC-3   DRM  LM-2  AC    Active          15 ASM     ABA  LMASM EV    Active
8  Empty reserved for Card



Last Command: dspcds


Next Command: upgdlogcd 6
```

upggrp (Upgrade Groups)

The **loadrev** and **runrev** commands take "upgrade group" names as arguments, allowing you to upgrade any subset of nodes at the same time.

Previous to Release 9.1, you could specify either a single node name, or an '*' (asterisk) to specify all nodes in the network, as an argument to **runrev** or **loadrev**. An upgrade group is a list of nodes, which could be all nodes in the network. Instead of running **runrev** for each node to be upgraded, upgrading an entire group of nodes at one time leads to a synchronized upgrade process (which the "staggered update mechanism" relies on). The staggered mechanism prevents a situation where many nodes send messages to a single node at the same time.

After an upgrade, each node requests information from every node about its topology and connection database to compensate for any errors or race conditions that may occur during the upgrade. Every node sends its messages to only one node during a given interval. If all nodes start sending these updates at the same time (and the interval is configured the same on all nodes), then all nodes will send messages to different nodes as everyone has a different node number. Whenever the interval ends, they start sending to a node with the next node number. If they would not start at the same time, there would be overlaps as one node could be in its first interval, whereas others are already in the second or third interval.

If all nodes start at the same time, it is guaranteed that one node will exchange updates with only one other node during a given interval, reducing the amount of stress that would occur when multiple nodes send updates to one node at the same time.

Attributes

Jobs	Log	Node	Lock
No	No	IGX, BPX	No

Associated Commands

dsprevs, cnfdlparm, loadrev, runrev

Syntax

upggrp [-c[reate] | -d[elete] | -s[how]] <group_name>

upggrp [-a[dd] -r[emove]] <group_name> <node_list

Function

This command creates a group of nodes to be upgraded by the **loadrev** and **runrev** commands. To create an upgrade group type

upggrp -c <group name>

You can create up to 20 upgrade groups. Naming the upgrade groups follows the same convention as for node names; that is, choose group names that are different from the node names in the network. If **loadrev** or **runrev** encounter a name conflict, the commands chose the node name interpretation.

Note Upgrade groups are only known on the node where they are created. They are neither sent to the Standby, nor saved in BRAM. It is assumed they are needed for a short time only. Once the upgrade is done, you can delete the groups.

To delete an upgrade group that is no longer needed, enter:

upggrp -d <group name>

This frees up the resources used by that group.

To show (list) the currently defined upgrade groups, enter:

upggrp -s

To list all the member nodes of a group, enter:

upggrp -s <group name>

To add several nodes to an upgrade group, enter:

upggrp -a <group name> <node 1> <node 2>...

The length of the node list can be as long as the command line allows. If an entry is invalid, that is, it is not a valid node name or not a name of a node in the network, an error message prints, and the remainder of the node list is not processed. The nodes before the invalid node are added to the group.

After the command is executed, the members of the group are listed. You can add nodes to an upgrade group in multiple iterations.

To remove a node or several nodes from an upgrade group, enter:

upggrp -r <group name> <node 1> <node 2>...

The length of the node list can be as long as the command line allows. If an entry is invalid, that is, it is not a valid node name or not the name of a node in the net, an error message is printed, and the remainder of the node list is not processed. The nodes before the invalid node name are removed from the group. After the command is executed, the members of the group are listed.

See Table 1-66 for **upggrp** parameter descriptions.

Table 1-66 upggrp—Parameters

Parameters	Description
upggrp -d[delete] <group name>	delete a user group
upggrp -s[how] [<group name>]	show the defined upgrades group(s)
upggrp -a[ddnode] <group name> <list of node names>	add nodes to the group
upggrp -r[emovenode] <group name> <list of node names>	remove list of nodes from group