



Data Networking Products Commands Reference

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Preface

The *Data Networking Products Commands Reference*, Issue 3, provides detailed descriptions of the commands a network administrator needs to establish and maintain a database for a network of computers and terminals. Except for introductory material explaining each command mode, the *Data Networking Products Commands Reference* is an encyclopedia of commands. Each command entry details the finer technical points the administrator might need to know about the command and its syntax, parameters, method of entry, and report fields, if applicable.

Important Notice

As of January 1997, Lucent Technologies is merging *Datakit II* VCS and MPC15 into one BNS-2000 hardware platform. The new name for *Datakit II* VCS is BNS-2000 VCS; the new name for the MPC15 is BNS-2000 MPC. Ordering will be simplified through the use of one (1) "J" drawing for initial orders. There will be different software for the BNS-2000 and BNS-2000 VCS but one (1) BNS-2000 documentation set that will include the necessary information for the BNS-2000, BNS-2000 VCS, and BNS-2000 MPC. Existing *Datakit II* VCS and BNS-2000 customers will receive the new documentation set when they purchase upgrades.

The BNS-2000 hardware platform will consist of the following options:

- BNS-2000. This is the BNS-2000 M1/M2 cabinet configuration supporting both low-speed (M1) and high-speed (M2) modules. This configuration will require BNS-2000 software.
- BNS-2000 VCS. This is the BNS-2000 VCS M1-only cabinet configuration supporting low-speed (M1) modules. The M1 cabinet will contain clock/repeater modules as opposed to CIM/CTRM modules contained in BNS-2000 M1 cabinets. M2 cabinets are not required. This configuration requires BNS-2000 VCS/*Datakit II* VCS R6.0 software.
- BNS-2000 MPC. This is the BNS-2000 MPC M1 Multipurpose Concentrator cabinet configuration.

BNS-2000 Release 5.0 documentation will be updated to include information on the BNS-2000, BNS-2000 VCS, and BNS-2000 MPC.

All BNS-2000 offerings described above are managed by *StarKeeper II* Network Management System (NMS). (When configuring BNS-2000 VCS, customers select "Datakit II VCS" as the node option.)

BNS-2000 training courses will be updated to include information on the BNS-2000 VCS and BNS-2000 MPC offerings.

Year 2000 Compliance

BNS-2000 Release 4.0, Build 57, and *StarKeeper II* NMS Release 9.0 provide *Year 2000 Compliance* through the support of four-digit years in most date fields; two digit years are also supported in an unambiguous way.

New Material

This issue of the *Data Networking Products Commands Reference* includes new material on the STR4 Stratum 4 Clock. Refer to the *System Description* for more information about how the STR4 affects node configurations.

Document Organization

The document is organized as follows:

Alphabetical List of Commands	This portion of the document lists all administrator commands by mode of entry. Because the list is alphabetized by command verb and contains appropriate page numbers, it is a valuable cross reference for Parts 1 through 5.
Node Commands Overview	This section explains system hardware, all command modes and their access, and command syntax and node output.
Startup Command	This section includes an overview of the system conventions imposed on the startup command set. It explains the startup mode and its prompt, the command conventions, system responses, and other necessary related information.
Operations Commands	This two part section includes an overview of the system conventions imposed on the operations commands. It explains the operations mode and its prompts, command conventions, system responses, and other necessary information relating to the operations commands. Discussions of over 150 operations commands that the administrator must use to administer and maintain database elements, interface modules, and the network are included. Each command entry includes introductory material that is relative to the command "family." Each discussion includes the command name, its abbreviation, a functional description, its syntax along with any applicable entry notes, definitions of its parameters, examples of entry methods, and—if applicable—reports and report field definitions.

Loader Commands

This section opens with an overview of the system conventions imposed on the loader commands. It explains the loader mode and its prompts, command conventions, system responses, and other necessary information relating to the loader commands. Discussions of the loader commands that the network administrator must use to display a directory listing of the active file system, to display a list of commands available for the loader mode, to change to monitor mode, and to run a program follow. Each command verb discussion includes the command name, its abbreviation, a functional description, its syntax, any applicable entry notes, definitions of its parameters, examples of entry methods, and any appropriate system responses or output.

Monitor Commands

This section begins with an overview of the system conventions imposed on the monitor commands. It explains the monitor mode and its prompts, command conventions, system responses, and other necessary information relating to the monitor commands. Discussions of the monitor commands that the network administrator must use to boot the system, to copy and format the disk or tape, and to diagnose system hardware follow. Each command verb discussion includes the command name, its abbreviation, a functional description, its syntax, any applicable entry notes, definitions of its parameters, examples of entry methods, and appropriate system responses.

MRC Commands

This section includes an overview of the system conventions imposed on the Maintenance and Redundancy Control (MRC) commands. It explains the MRC mode and its prompts, command conventions, system responses, and other necessary information relating to the MRC commands. Discussions of the utility commands that the network administrator must use to administer and control the MRC are included. They are presented in *alphabetical order by verb*. Each command verb discussion includes the command name, its abbreviation, a functional description, its syntax, any applicable entry notes, definitions of its parameters, examples of entry methods, and any appropriate system responses or output.

Utility Commands

This section includes an overview of the system conventions imposed on the utility commands. It explains the utility mode and its prompts, command conventions, system responses, and other necessary information relating to the utility commands. Discussions of the utility commands that the network administrator must use to manipulate aspects of the control computer environment and the operating system such as copying, verifying, and mounting file systems are included. Each command verb discussion includes the command name, its abbreviation, a functional description, its syntax, any applicable entry notes, definitions of its parameters, examples of entry methods, and any appropriate system responses or output.

Related Documents

Data Networking Products Publications describes the complete documentation sets available for the product line. (See the inside front cover for ordering information.)

The product library contains the following documents, which provide general information about the features and capabilities of the particular product or information directly related to network planning, configuration, and installation:

- *BNS-2000 System Description*
- *BNS-2000 Node Reference*

The following specialized documents are companion documents to this guide:

- *Data Networking Products Messages Reference*
- *Data Networking Products Multipurpose Concentrator Reference*
- *Data Networking Products Ordering Guide*
- *Data Networking Products Planning Guide*
- *Data Networking Products Synchronous/Asynchronous Module Reference*

Additional information for any trunk or interface module mentioned can be found in the appropriate reference document for that module.

Alphabetical List of Commands

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Node Commands Overview

This volume of the *Data Networking Products Commands Reference* gives detailed explanations of the commands used in working with a local node. The command sets that are specifically used with the interface modules or certain other hardware components, such as the Synchronous/Asynchronous Modules (SAMs), are given in the reference document for the module or component.

System Hardware

In previous product releases, the Control Computer hardware available was designated as an ECPU system. Beginning with the new product releases, the single-slot Control Computer Module (CCM)—which consists of the Control Computer, the Small Computer Systems Interface (SCSI) and its controller, and disk drives—is supported. In addition, an internal and external tape drive is accommodated. The ECPU system, which was used in previous releases, is still supported; however, all output shown on sample screens is for the CCM system.

Coupled with the CCM in redundant controller configurations is the Maintenance and Redundancy Control Input/Output (MRCIO) board, which supports the same functions as the existing Maintenance and Redundancy Control Module (MRCM) used in ECPU systems. The MRCM cannot be used with the CCM nor can the MRCIO be used with the ECPU System.

Command Modes

The node commands are executed in one of several *modes* of operation. Each mode of operation, along with its associated command set, performs specific node functions:

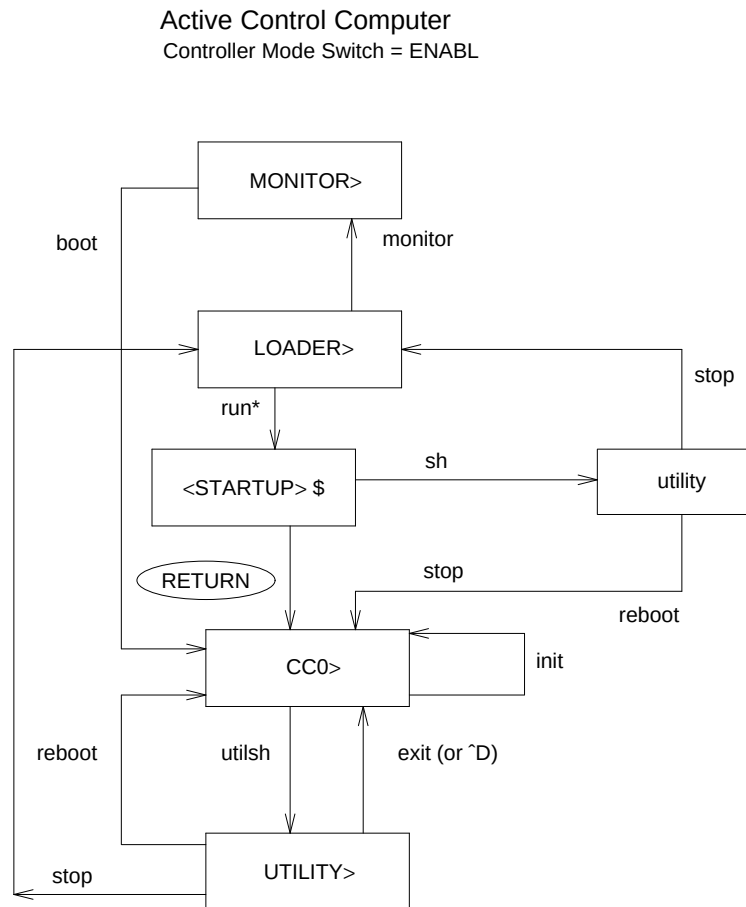
- *Operations mode* — In this mode, the operations, administration, and maintenance functions for node hardware modules and their database elements are executed. The prompt displayed in this mode depends on the Control Computer configuration and whether the Control Computer is currently in active service or standby service. The prompts displayed are **CC0>** or **SC0>**, respectively. Refer to **Operations Commands** for a detailed explanation of prompts.
- *Loader mode* — In this mode, programs are loaded and run. The loader mode prompt is **LOADER>**.
- *Monitor mode* — In this mode, system-related maintenance functions are performed in a low-level processing state. The monitor mode prompt is **MONITOR>**.

- *MRC mode* — In this mode, the node administrator has access to the active or standby Control Computers, all node command modes and their command sets, and the command set for the Maintenance and Redundancy Control Input/Output (MRCIO) board or the Maintenance and Redundancy Control Module (MRCM). The MRCIO and the MRCM, along with the function each provides, are collectively referred to in all subsequent text as the Maintenance and Redundancy Control (MRC) function. The MRC mode prompt is **MRC>** on the MRCIO and **MRCM>** on the MRCM. Screens shown in this documentation use the **MRC>** prompt.
- *Startup mode* — In this mode, commands facilitate access from loader mode to utility mode. Some utility commands (those that are executed in the *standalone utility shell*) are only available if accessed from startup mode. The startup mode prompt is **<STARTUP> \$**.
- *Utility mode* — In this mode, node housekeeping functions, such as rebooting, auditing the database, and file handling, are performed. The utility mode prompt is **UTILITY>**.

Command Modes Access

The following diagrams illustrate the commands available *in each mode* that enable you to move from one mode to another. The diagrams show the differences in accessing the modes, depending on whether the controller mode switch is in the ENABL (enable) or DIAG (diagnose) position. During every day operation, the controller mode switch should **always** be in the ENABL position. If console security is being initially administered or the port password is being changed, only then should the mode switch be moved to the DIAG position. The database entry or change is not implemented until the switch is moved to the ENABL position, and the node is rebooted. See **enter node**.

For nodes configured with an MRC function, the MRC attention signal, preset to Escape, enables you to move from any Control Computer mode to MRC command mode. Use the MRC **connect** command to reconnect to the appropriate Control Computer.



* If you fail to enter **run** within 60 seconds the move to <STARTUP> \$ happens automatically.

FIGURE 1-1. Mode Access: Active Control Computer, ENABL Switch Position

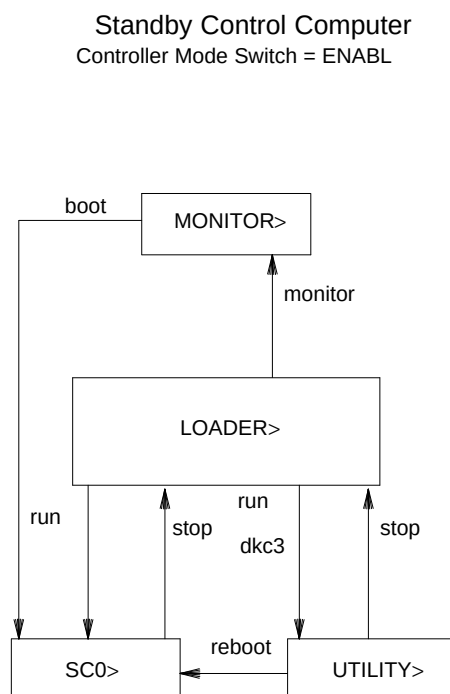
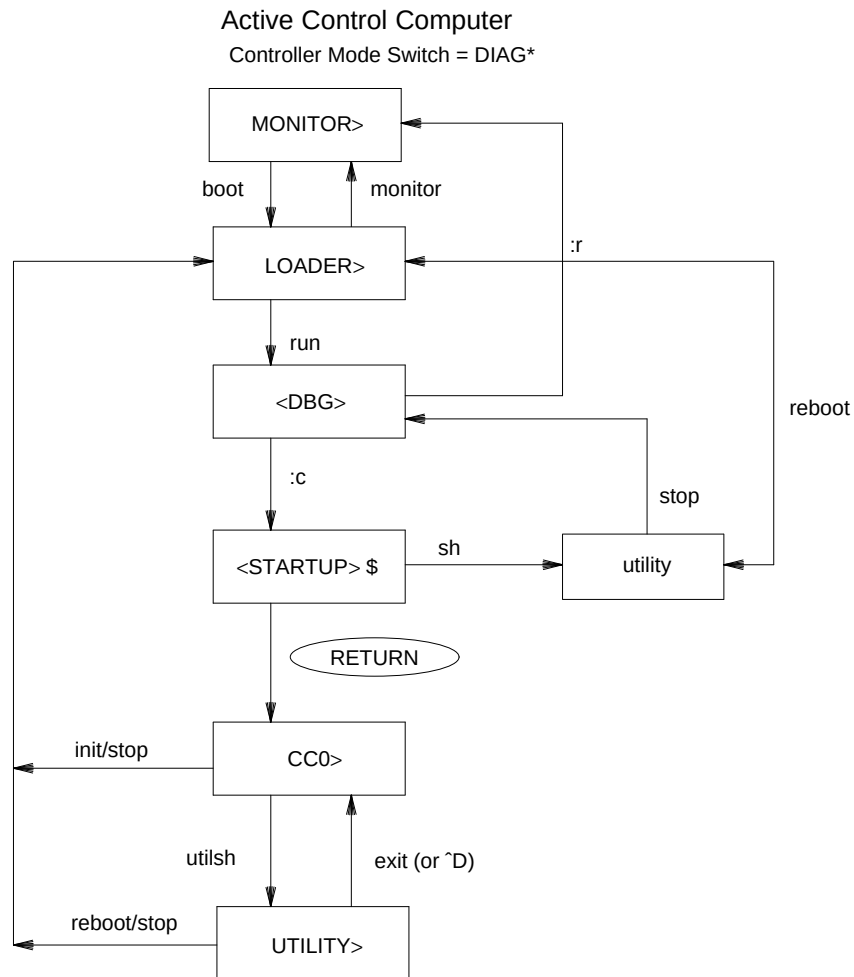
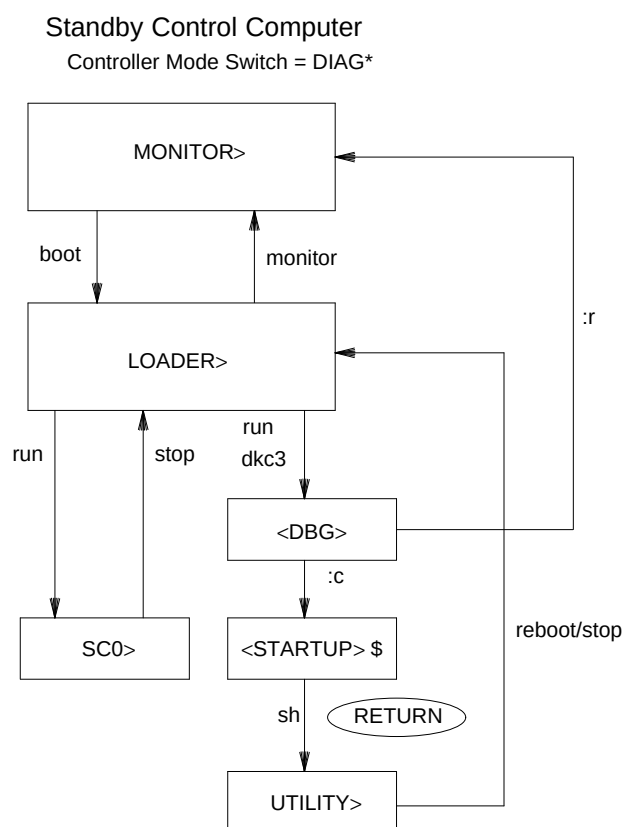


FIGURE 1-2. Mode Access: Standby Control Computer, ENABL Switch Position



* You must have local access to the node to put the controller mode switch in the DIAG position.

FIGURE 1-3. Mode Access: Active Control Computer, DIAG Switch Position



* You must have local access to the node to put the controller mode switch in the DIAG position.

FIGURE 1-4. Mode Access: Standby Control Computer, DIAG Switch Position

Command Syntax and Node Output

Command syntax is shown throughout the document in sections titled *Syntax* and node output is shown throughout the document in sections titled *Screen*. Screens are numbered consecutively.

In both *Syntax* and *Screen* sections node output is shown exactly as it appears on the node console except for the following:

- On the node console, the **OBJECTS** prompt lists all command objects that are applicable to the particular verb. These objects are listed in alphabetical order and are separated by a comma.

For clarity and readability, the documentation shows the **OBJECTS** prompt with only the object that is being explained in the section. The missing objects are indicated by ellipses. For example:

OBJECTS [...comments...]:

- Day, date, and time information, along with the node name, are shown on the node console with the actual day of the week, date, and time. The node name, as it is specified during an iteration of **enter node** or **change node** at the **LOCAL NODE NAME** prompt, is shown.

The documentation shows all day, date, and time information in the following formats:

<yy-mm-dd> <hh:mm:ss> NODE=<name>

<Day> <Date> <hh:mm:ss> <year>

<year(s)>

<yy-mm-dd> <hh:mm> - - - -> <yy-mm-dd> <hh:mm>

- Information that varies according to product and release is shown on the node console with the actual product name and release number and/or code. In the documentation, it is shown in the following formats:

<Product> <Release>

Release <number>

Release <code>

Many times, diagnostic test processes show each test name being run and whether the test passed or failed. In the documentation, this information is shown in the following format:

<Passed/Failed> <test name>

Numerical information that varies because of the product or system chosen is shown on the node console with actual numbers. Technical information—such as the amount of memory available—is shown in hexadecimal notation and nontechnical information—such as a government contract number—is shown with the actual contract number. In the documentation, this information is shown in the following formats:

Local Memory Size = <number>

Available Memory: <number> End of Supervisor: <number>

Government Contract No. <number>

Startup Command

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Startup Command

Startup mode is the last stage in the system booting process. The startup mode command allows you to access the utility or operations mode on an active Control Computer. Some utility commands (those that can be executed only in the *standalone utility shell*) must be accessed from startup mode (only after executing the **sh** command).

The prompt displayed in startup mode is **<STARTUP> \$** . From startup mode, you can access operations mode by entering a ; this is the default. You can run the standalone utility shell by entering the **sh** command. You can also run the file system check command, **fsck**, from startup mode, although it is normally executed from one of the utility mode shells; see **Utility Commands**.

Startup Mode Access

Gaining access to startup mode depends on the controller mode switch position:

- When the mode switch is in the ENABL position, you can access startup mode from the Control Computer prompt, **CC0>** , by first entering the **stop** command and then at the loader mode prompt, **LOADER>** , by entering the **run** command; see **Loader Commands**.
- When the mode switch is in the ENABL position, you can also access startup mode from the Control Computer prompt, **CC0>** , by entering the **initialize standalone** command, which boots the system directly to the startup mode.
- When the mode switch is in the DIAG position, you can access the startup mode from loader mode by entering the **run** command and then at the debugger mode prompt: **<DBG>** by entering the **:c** command.

Command Conventions and Entry Method

After entering the **stop** command at the active Control Computer prompt, if you press the return key, , the *etc/config* program runs and makes the node operational; no objects or arguments are necessary or permitted.

The **sh** command executes the standalone utility shell; this command has no objects or arguments.

The **fsck** command will execute normally and takes its regular objects (arguments); see **Utility Commands** for more details.

CAUTION: If utility shell commands are entered at the **<STARTUP> \$** prompt, there will be damage to the file system and the node will attempt to reboot.

On-line Help and System Responses

The startup command does not have any on-line help, nor any associated system responses.

Command Set

In startup mode, one command, **sh**, is available.

sh

The **sh** command enables you to move from startup mode to the standalone utility shell of utility mode. Refer to **Utility Commands** for a list of commands that can be executed from the standalone utility shell.

Syntax

You can input **sh** in one-line entry only.

```
<STARTUP> $ sh
```

Parameters

None.

```
CC0> stop
*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type 'help' or '?' for help
LOADER> run
Active CC
Loading text
Loading data
Clearing bss

Booted from Device: 5/0
Local Memory Size = <number>
Available Memory: <number> End of Supervisor: <number>

The controller mode switch is not in the "enabled" state. What should be run?

Option                Description
<return>              /etc/config, the default
sh                    /bin/mini_sh, an interactive shell
fsck <options> <file system> defaults to checking root
{cmd} [arg ...]       execute "cmd" with optional arguments.

-tty preceding a command leaves the console closed. This is required
if you are going to run an alternate "config" or "mini_sh".

<STARTUP> $ sh
MINI-SH: What can I do for you?
UTILITY>

<You are now in the standalone utility shell; no other applications are running.>
```

SCREEN 2-1. One-line Entry/Output: Going from Operations Mode to Startup Mode via Loader Mode

Operations Commands:

address-group

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Operations Commands:

address-group

The operations commands furnished with the node enable the network administrator to perform assorted operations, administration, and maintenance tasks for node hardware modules and their database elements. An array of system maintenance and utility commands are also available to help manage the Control Computer and network, the file handling system, all the interface modules, and the software.

This chapter describes the **address** through the **group** commands. The next chapter continues with the **hardware** through the **utilsh** commands.

The following sections explain the operations mode commands, their conventions, entry methods, and system responses.

In order to use all the operations commands, if you are bringing up the node for the first time, or upgrading your system by installing a new software release or a new software build, follow the procedures in *Volume 1* of this document for registering your node and installing software; also refer to the **install registration** command in this volume.

Using Operations Commands

To access the operations mode from the **<STARTUP> \$** prompt, press Return. At this level, the node is fully booted and any operations command can be entered while call processing continues. You can access the complete set of operations commands that pertain to the feature package or add-on feature purchased; or, if console security is enabled, you have login access to these commands.

If the node is not yet configured, three operations prompts can be displayed: **CC0>**, **SC0>**, and **SC1>**; where: **CC** identifies the active Control Computer; **SC** identifies the standby Control Computer; and the number **0** or **1** identifies the relative position of the Control Computer shelf. The number **0** corresponds to the Control Computer on the lower shelf; the number **1** corresponds to the Control Computer on the higher shelf.

If the node is already configured, four possible operations prompts can appear:

CC0>
CC1>
SC0>
SC1>

These prompts signify that the system is ready to accept command input. Unlike the **CC0>** and/or the **CC1>** prompts, only one operations command—the **stop** command—can be entered at either standby prompt.

NOTE: The **cc0>** prompt is used in examples throughout this document.

Other command modes can be accessed from the operations mode. The following table explains the operations commands to use when going from operations mode to another command mode.

TABLE 3-1. Exiting from Operations Mode

Operations Commands	Status
utilsh	Puts you in Utility Mode.
sync	Controller mode switch is in ENABL position. initialize circuits Controller mode switch is in DIAG position.* A complete reboot does not occur; you remain in Loader Mode.
sync	Controller mode switch is in ENABL position. initialize controller Controller mode switch is in DIAG position.* Performs a cold reboot; modules are not reset; you remain in Loader Mode.
sync initialize hardware	Controller mode switch is in ENABL position. Performs a cold reboot; modules are reinitialized. Controller mode switch is in DIAG position.* A complete reboot does not occur; you remain in Loader Mode.
sync initialize standalone	Controller mode switch is in ENABL position. Performs a warm reboot to the standalone utility shell. Controller mode switch is in DIAG position.* Performs a cold reboot; modules are not reset; you remain in Loader Mode. When booting continues, the controller will enter the standalone utility shell.
sync stop	Controller mode switch is in ENABL position. After stop , system pauses at LOADER> prompt for 45 seconds before proceeding. Established calls will be preserved. Controller mode switch is in DIAG position.* You remain in Loader Mode.

* Unless console security is being initially administered or the port password is being changed, the controller mode switch should always be in the ENABL position.

Verbs and Objects

The majority of operations commands available for entry consist of a *verb* and an *object* pair. This command *sentence* indicates the action to be performed and the recipient of the action. Most verbs, or commands, perform administrative tasks in the following areas:

- *Operations (Control)*—The commands used to control the service state of a module and, in some cases, a database element are **remove** and **restore**. The command **remove** enables a module or its component or element, such as its **port** or service **address**, to be taken out of service so database information can be added or changed or diagnostics can be run.

The command **restore** puts the hardware back into service and—for certain modules—automatically triggers a software download.

Commands such as **initialize** control the operating state of the Control Computer and all hardware and circuits; and commands like **set** control counts such as time and packets. Others entered without objects affect mode exit and entry (**exit** and **utilsh**), software execution (**stop**), and database synchronization (**sync**).

- *Administration (Database Management)*—The verbs used to add, modify, check, and eliminate database information for a module or element are **enter**, **change**, **verify**, and **delete**, respectively. The action and consequence of the **enter** and **change** commands relate to information supplied for the particular parameters for which the administrator is prompted; however, the action and consequence of the **delete** commands affect all existing database information regarding the object.

Other more specialized commands, such as **copy** and **move**, affect the manipulation of database information from one address to another.

- *Maintenance*—The routine maintenance of any module or element can be accomplished through commands that initiate diagnostics (**diagnose**) or display status (**dstat**), measurements (**dmeas**), or critical element data (**display**).

The remainder of the command sentence consists of the object, or recipient of the action. The more obvious objects name a piece of hardware such as a **controller** or **ty**. Many objects reflect the database element with which the module is associated; for example: **address**, **profile**, or **group**. Other objects—like **oosmods** (out-of-service modules), or **periodic_bill** (periodic billing)—name the utility function to be performed.

To summarize this information in a convenient form, each operations command object contains a table showing the related administration, operations, and maintenance commands. Along with this information, command objects that are related to the entire command set are listed. For example, if a command set such as **ty** supports call hold capabilities for a port, the **held** object appears; or, if a closed user group (CUG) profile can be administered for an endpoint, the **profile** object appears. In addition, if any related object must be administered before configuring an object's address in the database, this object is footnoted with an asterisk. For example, if a group must be administered before the port can be configured, the **group** object appears and is footnoted.

These tables, which appear in the opening paragraphs of each command object section (each command set), are simply titled with the command object name (the section name). An example of this type of table follows.

TABLE 3-2. Sample Command Set

Administration	Operation	Related Objects
change address delete address enter address verify address	remove address restore address	epn group* node* profile* sphaddr

* This object should be entered before configuring an address in the database.

Command Entry Conventions

Before any operations command is input, familiarize yourself with the following command and parameter entry conventions.

- *Lowercase letters*—The system can distinguish between uppercase and lowercase letters. Since it does not recognize commands entered in uppercase letters, use lowercase letters.
- *Abbreviations*—The system recognizes abbreviations for verb-object combinations; for example **enter group** and **verify node** can be abbreviated as:

ent grp (enter group)
vfy nd (verify node)

In addition, minimally unique abbreviations are usually accepted; for example:

v no (verify node)

- *Blank spaces*—The system requires you to enter a blank space to separate the verb, its object, and any parameters that follow. For example:

verify **module** **27**

-or-

verify module 27

Any blank spaces inadvertently added are ignored.

- *Return key*—Think of the key as the period that ends your sentence. Pressing signals the system to execute the command line.
- *Parameters, Options, and Defaults*—All commands are simple verb-object sentences punctuated with the key. The system executes them immediately. If you enter

retire alarm , for example, the system—with no further information—silences critical or major audible alarms.

Most commands, however, require you to supply more information before your request can be executed. This information is specified through parameters. Some commands have as few as two parameters; yet other commands have as many as ten. Regardless of the input method selected, you must specify command parameters in the order in which they appear in prompted entry. The format is:

<verb> <object> <parameter1> <parameter2> . . .

When the system prompts you for information, the parameter options are shown in brackets:

ECHO [yes, no: +(yes)]:

You can enter the option that is suitable for your application or you can enter the default. The default appears in parentheses after a + (plus sign). In the previous example, the default is yes. Select defaults by pressing: or + .

To select the defaults for all following parameters, enter: ++ .

NOTE: The examples shown in screens in the following sections illustrate the entry of a default value or a current entry parameter option with a + (plus sign). Pressing the key after typing in an entry is assumed and therefore not illustrated unless a double command loop occurs.

In addition, many commands require that you enter text for parameters such as comments or broadcast messages. Each parameter limits the number of characters that can be input on one line. However, the system may accept a line exceeding those designated limits. It truncates any line exceeding 80 characters and uses the remainder of the line (character 81 and those beyond) to overwrite characters 1 through 80. In this case, **no system responses or warnings are issued**.

This restriction becomes readily apparent when the text of the comment or broadcast message does not match the text originally input or the text appears to be the tail end of what was input.

In addition, the text of a parameter prompt as shown on each system console is dependent on the feature package installed. Most noticeable is the text output for the **OBJECT** prompt, which reflects only the hardware modules accommodated in the particular feature package.

For simplicity, the **OBJECT** prompts shown throughout this document reflect only the object being entered. Omitted objects are indicated by ellipses; for example:

```
CC0> enter
OBJECTS [...address...]: address
```

- **Looping**—Some parameters and their options are specified in one prompt. Others are more significant—they require a series of prompts to define their function or scope. You can specify a parameter option at this type of prompt and then, at subsequent prompts, you can specify options to further define it. When the series of prompts is exhausted, the system returns to the initial significant prompt. A new option can be specified at this time and the

circuit can be repeated or you can press to exit. This closed prompting circuit is referred to as *looping*. For example, if you enter a port number at the **PORT NUMBER** prompt, all parameter options specified at subsequent prompts apply to the port number you have just entered. When the series of prompts is exhausted, the system prompts you for a new **PORT NUMBER**. You can enter a new port number or press to stop the looping.

- *Timeouts*—If you wait longer than 40 seconds while entering any command or parameter option, the message **TIMEOUT ON INPUT** appears. If you press the key, you can ignore the message and retry the entry.

Entry Methods

After you access the system and are familiar with command conventions, you can begin to enter commands by one of three methods:

- *Prompted entry*—After you enter a verb, the system prompts you for additional information. You must supply this information in the order in which you are prompted. This method of command entry is useful when you are unfamiliar with the prompting order and parameter options that can be specified. Samples of prompted entry are clearly titled "Prompted Entry" in the following sections.
- *One-line entry*—Once you are familiar with the parameters, you can avoid being prompted for them by specifying them all at once, on one line, in the order in which they appear in prompted entry. Except for the **enter** and **change** commands and some **diagnose** commands, most commands can be entered at the **CC0>** or **CC1>** prompt in the one-line entry method:

```
CC0> verify module 33
```

```
CC0> remove address local ki1
```

NOTE: Some **enter** and **change** commands do permit the specification of one component on the command line; for example: **change frm port**. Additional parameters must be specified in prompted entry.

- *Partially prompted entry*—If you choose one-line entry, but fail to specify values for each required parameter, the system automatically begins to prompt you at the first missing or invalid parameter and continues to prompt you for all subsequent parameters.

System Responses

To inform you of a potential problem, an error, or an atypical state, or to provide you with helpful information, the system outputs responses during command entry and execution. Most system responses are categorized according to a *key phrase* that summarizes the nature of the response:

- **COMMAND FAILED**

Responses prefixed with this key phrase furnish the reason the command did not execute.

- **COMMAND FAILED: EXITED PREMATURELY: REASON 2**

Responses prefixed with this phrase indicate that the database was corrupted. If this message appears, try retrieving a saved version of your database, rebooting, and re-entering the command.

- **INFO**

These responses give you the additional data that you need to continue to administer the database or network properly.

- **INPUT ERROR**

If your entry to the prompt line was incorrect, the nature of the specific response is prefixed with **INPUT ERROR**. Input errors can occur during prompting of all commands, including **remove**, **restore**, **dmeas**, **diagnose**, and **dstat**.

- **REMOVE/RESTORE FAILED or REMOVE/RESTORE PROCESS**

After execution of the **remove** or **restore** command, responses prefixed with **REMOVE FAILED** or **RESTORE FAILED** might appear if the service state of the module or database element cannot be altered. Other system responses that are not necessarily prefaced by the phrases **REMOVE FAILED** or **RESTORE FAILED** are grouped under the heading **REMOVE/RESTORE PROCESS** for ease of reference.

- **WARNING**

Responses prefixed with **WARNING** caution you about a particular command entry.

The system responses prefixed by these key phrases are listed in alphabetical order and are organized in sections having the same heading.

Because of the hardware movement that occurs when running diagnostics (installing loopback connectors/cables, altering module service states) and the numerous network, system, and database states that must be exercised, the system responses output during module testing are more varied, and thus are not categorized by key phrases. These responses are grouped under the section called **DIAGNOSTICS** and are listed in alphabetical order.

The **NO KEY PHRASE** section includes those responses that occur during entry of any operations command. Many encompass failures that occur when discrete processing states must communicate—such as the communication that must occur when collecting database/system/network information for report output or when trying to terminate a command.

The sections are presented in this order:

- COMMAND FAILED**
- DIAGNOSTICS**
- INFO**
- INPUT ERROR**
- NO KEY PHRASE**
- REMOVE/RESTORE FAILED**
- WARNING**

Some system responses, such as the following, can be output during the iteration of any command:

COMMAND FAILED:

No memory. Try again later.

The system is currently busy with a heavy call processing load. Retry the command after 5 to 10 minutes.

NO KEY PHRASE:

COMMAND NOT IMPLEMENTED

The command name is reserved for future use; it is not implemented in the current system. Check the spelling of the command you entered on the command line.

NOT ENOUGH UNIQUE CHARACTERS FOR <COMMAND/OBJECT>

Several commands or objects match the beginning pattern <name> you input. Enter additional characters, so only one command or object is selected.

UNRECOGNIZED COMMAND: name

The command entered does not exist. Check the spelling.

On-line Help

While at the console, you might need to refresh your memory about an operations command or its function. Three levels of on-line help are supplied for these commands:

- *First level*—If you input **help** at the **CC0>** or **CC1>** prompt, the system supplies a list of all verbs.
- *Second level*—If you input **help <verb>**—for example, **help enter**—the system lists all valid objects for the verb **enter**. In addition, you can input **help documents** for a list and explanation of all current node documentation.
- *Third level*—If you input **help <verb> <object>**—for example **help enter address**—the system supplies a brief description of the verb/object combination.

For more detailed information regarding this feature, see the **help** command.

Special Function Keys

Some system console keys perform special functions when entering a command or accessing various command modes.

TABLE 3-3. Special Function Keys

Function	Editing Key
Back up to correct a character. (The system interprets characters backed over with Backspace as erased; but these characters remain on the screen unless typed over with new characters.)	Backspace or Control H
Erase a character.	#
Erase a line.	@ or Control X
Terminate a command; abort command looping; put downloads in the background; end diagnostic looping; or quit a long report.	Delete
Redisplay current input line when # editing key is used.	Control R
Execute a command; in prompted-entry mode, enter a default if another option is not specified.	Return
Ignore a line end; remove the significance of any preceding editing character.	\

address command set

The following commands are related to the **address** command set.

Administration	Operation	Related Objects
change address delete address enter address verify address	remove address restore address	epn gateway group* host node* profile* sphaddr

* This object should be entered before configuring an address in the database.

change address

The **change address** command enables you to modify an existing service address along with its associated directory entry, security relationship, groups, and X.25, X.25P, or X.75 attributes. Before any address information can be modified, the address must be taken out of service with **remove address**. The additional restrictions that apply to this command are:

- The **LEVEL** and the **NUMERIC FORMAT** of an address cannot be changed with **change address**. To change the level of an address or the numeric format, the address must be taken out of service with **remove address**, its information deleted with **delete address**, and then the new address must be entered with **enter address**.
- The local node network, area, or exchange address cannot be changed with **change address**. To change these addresses use **change node**.
- The endpoint number(s) assigned to a device (a port) cannot be changed with **change address**. The appropriate **change** command associated with the hardware module (such as **change ty** or **change x25p**) should be used.

Syntax

You can input **change address** in prompted entry only. The prompting sequence depends on your response to the **LEVEL** and **NEW TYPE** prompts. The defaults for **change address** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

```
CC0> change
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]:

If LEVEL is "network" and TYPE is "numeric":
  NUMERIC FORMAT [nanp_x121, international_x121]:

  CURRENT ADDRESS:
  NEW TYPE [numeric, mnemonic, both: +(numeric)]:

If CURRENT ADDRESS was type "numeric" with NUMERIC FORMAT being "nanp_x121"
or NEW TYPE is "mnemonic":
  MNEMONIC ADDRESS [up to 8 chars]:
If CURRENT ADDRESS was type "mnemonic":
  NEW MNEMONIC ADDRESS [up to 8 chars: +(current entry)]:

If LEVEL is "local" and MNEMONIC ADDRESS is named "billing":
  DIRECTORY ENTRY [up to 30 chars double quoted, none: +(none)]:
  SPACE (IN BYTES) FOR BILLING HELD DATA
  [none, 1000, 10000, 20000, 30000, 40000, 50000, 60000, 70000: +(none)]:

If LEVEL is "network", NEW TYPE is "numeric", and NUMERIC FORMAT is "nanp_x121";
or if CURRENT ADDRESS was type "mnemonic":
  DNIC [0000-9999]:
```


Syntax (continued)

If *CURRENT ADDRESS* was type "numeric" and *NUMERIC FORMAT* was "nanp_121"

NEW DNIC [0000-9999: +(current entry)]:

If *LEVEL* is "network" and *NEW TYPE/TYPE* is "numeric":

SUPPRESS PREFIX TO X25 PDN [yes, no: +(current entry)]:

SUPPRESS DCC TO X25 PDN [yes, no: +(current entry)]:

If *NEW TYPE* is "numeric" and *NUMERIC FORMAT* is "international_x121";

and If *INTERNATIONAL FORMAT* is "dnic+ntn":

NEW DNIC+NTN [4 to 10 digits: +(current entry)]:

If *INTERNATIONAL X.121 FORMAT* is "cc+nsn":

NEW CC+NSN [up to 7 digits: +(current entry)]:

If *INTERNATIONAL X.121 FORMAT* is "tcc+nsn":

NEW TCC+NSN [up to 7 digits: +(current entry)]:

If *LEVEL* is "area" and *NEW TYPE* is "numeric"; or if *CURRENT ADDRESS* was type "mnemonic":

SERVICE REGION [000-999]:

If *CURRENT ADDRESS* was type "x121":

NEW SERVICE REGION [000-999: +(current entry)]:

If *LEVEL* is "exchange" and *NEW TYPE* is "numeric"; or if *CURRENT ADDRESS* was type "mnemonic":

SERVICE AREA [000-999]:

If *CURRENT ADDRESS* was type "x121":

NEW SERVICE AREA [000-999: +(current entry)]:

If *LEVEL* is "local" or "speedcall"; *CURRENT ADDRESS* was type "mnemonic"; or *NEW TYPE* is "numeric":

ENDPOINT NUMBER OR RANGE [0000-9999]:

If *CURRENT ADDRESS* was type "x121":

NEW ENDPOINT NUMBER OR RANGE [0000-9999: +(current entry)]:

If *LEVEL* is "speedcall":

DIAL STRING ENTRY [up to 72 chars: +(current entry)]:

DISPLAY DIAL STRING AS DIRECTORY ASSISTANCE [yes, no: +(current entry)]:

If *ADDRESS* is not billing or directory assistance and *LEVEL* is not "speedcall":

PAD SUPPORT [yes, no: +(current entry)]:

If *PAD SUPPORT* is "yes":

X.3 PROFILE ID [up to 20 chars, mbit, simple, transparent:

+(current entry)]:

USE HIGH LEVEL PROTOCOL [yes, no: +(current entry)]:

If *HIGH LEVEL PROTOCOL* is "yes":

HIGH LEVEL PROTOCOL [hex number ("0x01" for X.29): +(current entry)]:

If *LEVEL* is "local" and *TYPE* is "numeric":

CLOSED USER GROUP PROFILE ID [up to 8 chars, none: +(current entry)]:

DIRECTORY ENTRY [up to 30 chars double quoted, none: +(current entry)]:

If *ADDRESS* is not billing or directory assistance:

GROUP(S) [up to 4 groups separated by commas, none: +(current entry)]:

If *ADDRESS* is not billing:

ORIGINATING GROUP NAME SECURITY PATTERN(S)

[comma-separated pattern list, same_as, none: +(current entry)]:

Syntax *(continued)*

If **ORIGINATING GROUP NAME SECURITY PATTERN(S)** is "same_as":

SAME AS WHICH ADDRESS

LEVEL [network, area, exchange, local: +(local)]:

ADDRESS:

If the security string was shared and is changed:

CHANGE ALL ADDRESSES WITH SAME SECURITY [yes, no: +(yes)]:

Command loops to **LEVEL** prompt.

Parameters

This section contains explanations of parameters used in the **change address** prompting sequence that differ from those used in **enter address**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CHANGE ALL ADDRESSES WITH SAME SECURITY

If the security pattern is changed at the **ORIGINATING GROUP NAME SECURITY PATTERN(S)** prompt and other addresses share the same security pattern, specifies if all addresses with the same security strings should (yes) or should not (no) have their security string changed.

CURRENT ADDRESS

Specifies the address to be changed. This address can be a mnemonic address, DNIC, service region, service area, or endpoint number or range.

NEW DNIC

A four-digit number from 0000 to 9999 specifying the new Data Network Identification Code (DNIC) that is to replace the current DNIC entry.

NEW DNIC+NTN

From 4 to 10 digits of an X.121 address which identifies the new route associated with the address.

NEW ENDPOINT NUMBER OR RANGE

A new four-digit number ranging from 0000 to 9999 that replaces the current endpoint number or range. If the number entered at the **CURRENT ENDPOINT NUMBER OR RANGE** is the lowest endpoint number of a range or is a range, then the default for the **NEW ENDPOINT NUMBER OR RANGE** is specified as a range of endpoint numbers.

NEW CC+NSN

Up to 7 digits of an E.164 address which identifies the new route to reach the gateway to the public switched telephone network/ISDN where digital interworking is required.

NEW TCC+NSN

Up to 7 digits of an E.164 address which identifies the new route to reach the gateway to the public switched telephone network/ISDN where analog interworking is required.

Parameters *(continued)***NEW MNEMONIC ADDRESS**

A string of 1 to 8 characters representing the new mnemonic address (for the existing network, area, exchange, or local address) that is to replace the current address entry.

NEW SERVICE AREA

A three-digit number ranging from 000 to 999 that replaces the current service area entry.

NEW SERVICE REGION

A three-digit number ranging from 000 to 999 that replaces the current service region entry.

NEW TYPE

Specifies if the new address is to be represented as a *mnemonic* or *numeric* with the **NUMBER FORMAT** already being specified as *nanp_x121*; or as *both* a numeric and a mnemonic. The default is the *current entry*.

NUMERIC FORMAT

If **LEVEL** is *network*, specifies if the numbering plan used to represent the service address adheres to the X.121 North American Numbering Plan (*nanp_x121*) or the X.121 International Numbering Plan (*international_x121*).

TYPE

Specifies if the new address is to be represented as a *mnemonic* or *numeric* with the **NUMBER FORMAT** already being specified as *nanp_x121*;

```
CC0> change
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]: +
CURRENT ADDRESS: KI1
NEW TYPE [x121, mnemonic, both: +(both)]: +
NEW MNEMONIC ADDRESS [up to 8 chars: +(KI1)]: +
NEW ENDPOINT NUMBER OR RANGE [0000-9999: +(5411)]: +
PAD SUPPORT [yes, no: +(no)]: +
CLOSED USER GROUP PROFILE ID [up to 8 chars, none: +(compctr)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Ed Center Comp Center"
GROUP(S) [up to 4 groups separated by commas, none:
+(tyr, cpmr)]: ++
ORIGINATING GROUP NAME SECURITY PATTERN(S)
[comma-separated pattern list, same_as, none:
+(none)]:
LEVEL [network, area, exchange, local, speedcall: +(local)]: 
CC0>
```

SCREEN 3-1. Prompted Entry: Changing Address Information

delete address

The **delete address** command enables you to eliminate an address and its associated information from the database. The address must be taken out of service with **remove address** before any database information can be deleted.

Either a mnemonic or an X.121 address can be entered for deletion. If the address was entered in both mnemonic and X.121 forms, only one form must be specified. The system automatically deletes both addresses. When deleting an endpoint number range, specify either the entire range or the lowest endpoint number in the range.

To disassociate a mnemonic address from an X.121 address, use **change address**.

Syntax

You can input **delete address** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]:

If LEVEL is "network":
TYPE [mnemonic, nanp_dnic, dnic_ntn_intl, cc_nsn_intl, tcc_nsn_intl]:
ADDRESS:
```

Parameters

This section contains explanations of parameters used in the **delete address** prompting sequence that differ from those used in **enter address**.

ADDRESS

A numeric or alphanumeric string indicating the address to be deleted. For a further explanation of the parameters that constitute an address, refer to the detailed definitions in **enter address**. (A mnemonic address includes a network, area, exchange, and local service address; an X.121 address includes a DNIC, service region, service area, or endpoint number or range.)

```
CC0> delete
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]: +
ADDRESS: KI1
CC0>
```

SCREEN 3-2. Prompted Entry: Deleting Address Information

```
CC0> delete address local KI1
```

SCREEN 3-3. One-line Entry: Deleting Address Information

enter address

enter address

The **enter address** command enables you to enter *mnemonic*, *numeric*, or *both* addresses into the database. Service addresses associate a string of numbers and/or alphanumeric characters with one or more originating or receiving (destination) devices.

Syntax

You can input **enter address** in prompted entry only. The prompting sequence depends on your response to both the **TYPE** and **LEVEL** prompts. The defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]:
TYPE [numeric, mnemonic, both: +(mnemonic)]:
```

If **LEVEL** is "network" and **TYPE** is "mnemonic" or "both":

```
MNEMONIC ADDRESS [up to 8 chars]:
```

If **LEVEL** is "local" and **MNEMONIC ADDRESS** is named "billing":

```
DIRECTORY ENTRY [up to 30 chars double quoted, none: +(none)]:
SPACE (IN BYTES) FOR BILLING HELD DATA
[none, 1000, 10000, 20000, 30000, 40000, 50000, 60000, 70000: +(none)]:
```

If **LEVEL** is "network" and **TYPE** is "both":

```
DNIC [0000-9999]:
```

If **LEVEL** is "network" and **TYPE** is "numeric":

```
NUMERIC FORMAT [nanp_x121, international_x121: +(nanp_x121)]:
```

For X.25 service only, if **NUMERIC FORMAT** is "nanp_x121" or if **TYPE** is "both":

```
DNIC [0000-9999]:
SUPPRESS PREFIX TO X25 PDN [yes, no: +(no)]:
SUPPRESS DCC TO X25 PDN [yes, no: +(no)]:
```

If **NUMERIC FORMAT** is "international_x121":

```
INFO: select the international format from the following list:
```

```
1:DNIC+NTN
2:CC+NSN
3:TCC+NSN
```

```
INTERNATIONAL X.121 FORMAT [1,2,3]:
```

If **INTERNATIONAL X.121 FORMAT** is "1":

```
DNIC+NTN [4 to 10 digits]:
```

If **INTERNATIONAL X.121 FORMAT** is "2":

```
CC+NSN [up to 7 digits]:
```

If **INTERNATIONAL X.121 FORMAT** is "3":

```
TCC+NSN [up to 7 digits]:
```

Syntax (continued)

If **LEVEL** is "area" and **TYPE** is "numeric" or "both":

SERVICE REGION [000-999]:

If **LEVEL** is "exchange" and **TYPE** is "numeric" or "both":

SERVICE AREA [000-999]:

If **LEVEL** is "local" or "speedcall" and **TYPE** is "numeric" or "both":

ENDPOINT NUMBER OR RANGE [0000-9999]:

If **LEVEL** is "speedcall" and **TYPE** is "numeric" or "both":

DIAL STRING ENTRY [up to 72 chars]:

DISPLAY DIAL STRING AS DIRECTORY ASSISTANCE [yes, no: +(no)]:

If **LEVEL** is not "speedcall" and address is not billing or directory assistance:

PAD SUPPORT [yes, no: +(no)]:

If **PAD SUPPORT** is "yes":

X.3 PROFILE ID [up to 20 chars, mbit, simple, transparent: +(simple)]:

USE HIGH LEVEL PROTOCOL [yes, no: +(yes)]:

If **PAD SUPPORT** is "yes" and **HIGH LEVEL PROTOCOL** is "yes":

HIGH LEVEL PROTOCOL [hex number ("0x01" for X.29): +(0x01)]:

If **LEVEL** is "local", and **TYPE** is "numeric" or "both":

CLOSED USER GROUP PROFILE ID [up to 8 chars, none: +(none)]:

DIRECTORY ENTRY [up to 30 chars double quoted, none: +(none)]:

If address is not billing or directory assistance:

GROUP(S) [up to 4 groups separated by commas, none: +(none)]:

If address is not billing:

ORIGINATING GROUP NAME SECURITY PATTERN(S)

[comma-separated pattern list, same_as, none: +(none)]:

If **ORIGINATING GROUP NAME SECURITY PATTERN(S)** is "same_as":

SAME AS WHICH ADDRESS

LEVEL [network, area, exchange, local: +(local)]:

ADDRESS:

If at least one group is entered or **LEVEL** is "speedcall":

INITIAL SERVICE STATE [in, out: +(out)]:

Command loops to **LEVEL** prompt.

Parameters

This section contains explanations of parameters used in the **enter address** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CLOSED USER GROUP ID

If **TYPE** is *numeric* or *both* and **LEVEL** is *local*, a string of 1 to 8 alphanumeric characters that specifies the CUG profile identifier that should be associated with this address.

DIAL STRING ENTRY

If **LEVEL** is *speedcall*, a string of 1 to 72 characters that fully describes the speedcall address. It has the format: *[network/[area/[exchange/]]]local[.optional parameters]*

enter address

Parameters *(continued)*

DIRECTORY ENTRY

A string of 1 to 30 characters, enclosed in double quotes, that describes the address being entered; or, the word *none* meaning a directory entry is not to be associated with this address. A directory entry may be displayed to terminal users when they request directory assistance.

DISPLAY DIAL STRING AS DIRECTORY ASSISTANCE

If **LEVEL** is *speedcall*, specifies if (*yes* or *no*) the speedcall dial string should be displayed as directory assistance information. (The dial string entry specified is only shown as directory assistance if the response is *yes* and if the speedcall address has been restored to service.)

DNIC

If **TYPE** is *numeric* or *both*, a four-digit number from 0000 to 9999 that specifies the Data Network Identification Code (DNIC) for the address being entered. This number, which is equivalent to a *network*, is used to route calls to other public data networks (PDNs). The significance of the first digit is as follows:

Position	Represents
0	non-zoned services
1	non-zoned services
2*	world zone
3*	world zone
4*	world zone
5*	world zone
6*	world zone
7*	world zone
8	internetworking with Telex networks
9	internetworking with telephone networks

* The first three digits identify the Data Country Code (DCC); the fourth digit identifies a specific data network in the country. These country codes are not compatible with E.164 country codes.

ENDPOINT NUMBER OR RANGE

If **TYPE** is *numeric* or *both*, a four-digit number ranging from 0000 to 9999 that is equivalent to a local address. This number can be specified as a single number (addressx) or as a range of numbers (addressx-yyyy). The first number (with the lesser value) is the low end of the range; the second (with the greater value) is the high end. No spaces are permitted.

Parameters *(continued)***GROUP(S)**

Specifies the name of one to four group(s), separated by commas, that are to be associated with the address being entered; or, the word *none* meaning no groups are to be associated with the address being entered.

HIGH LEVEL PROTOCOL

If **USE HIGH LEVEL PROTOCOL** is *yes*, a two-digit number represented in hexadecimal notation (*hex number*) or the value *0x01* that is put in the call user data field of an X.25 call packet to indicate the use of a higher level protocol such as X.29.

INITIAL SERVICE STATE

Specifies whether the address being entered can be put in service (*in*) to direct calls to destination devices or whether it should remain out of service (*out*).

INTERNATIONAL X.121 FORMAT

Specifies the format of the International X.121 address to be 1 (DNIC+NTN), 2 (CC+NSN), or 3 (TCC+NSN); where:

- 1 (DNIC+NTN) specifies from 4 to 10 digits of an X.121 address which identifies the particular route associated with the address.
- 2 (CC+NSN) specifies up to 7 digits of an E.164 address which identifies the route to reach the gateway of the public switched telephone network/ISDN where digital interworking is required.
- 3 (TCC+NSN) specifies up to 7 digits of an E.164 address which identifies the route to reach the gateway of the public switched telephone network/ISDN where analog interworking is required.

LEVEL

Specifies if the address being entered is that of a *network* code, *area* code, *exchange* code, *local* service, or *speedcall* service. Network, the highest level, identifies the set of area codes that constitute a data network. An area code identifies a set of exchange codes. An exchange code identifies the lowest level—a set of local service addresses. A local service address identifies a set of devices. A speedcall is a substitution for a destination code—a shortened form of a longer address.

MNEMONIC ADDRESS

If **TYPE** is *mnemonic* or *both*, a string of 1 to 8 alphanumeric characters specifying the network code, area code, exchange code, local service, or speedcall service; or the word *billing* specifying a billing group and service address to which billing information is to be sent and collected for the node; or the symbol ? specifying the creation of a list of service addresses to be used for end-user directory assistance.

enter address

Parameters (continued)

The strings *all* and *none*, along with any blanks or special characters, are **not** allowed. If a local mnemonic address is specified as *billing* or *?* (directory assistance), it cannot have an associated X.121 address. In addition, the mnemonic address string cannot resemble a valid X.121 address string that is appropriate for a specific level. These mnemonic addressing restrictions apply:

Level	Restriction	Likeness to X.121
<i>network</i>	cannot be 4 digits	DNIC
<i>area</i>	cannot be 3 digits	service region
<i>exchange</i>	cannot be 3 digits	service area
<i>local/speedcall</i>	cannot be 4 digits	endpoint number

NUMERIC FORMAT

If **TYPE** is *numeric*, specifies if the address being entered is in the *nanp_x121* or *international_x121* format. The *nanp_x121* format complies with CCITT Recommendation X.121. The *international_x121* format complies with the International Numbering Plan for PDNs and CCITT Recommendation E.164.

ORIGINATING GROUP NAME SECURITY PATTERN(S)

A string of 1 to 72 characters, entered as a comma-separated pattern list, that defines the security for the address; or, *same_as* indicating the security pattern is the same string defined for an existing originating group; or, *none* meaning security is not to be established.

Only 16 characters per address level are allowed; the maximum pattern cannot exceed 67 characters. The *same_as* option is not supported for international addresses.

For an originating device to access the address, the originating group to which it belongs must match at least one pattern entered at this prompt and must not be excluded by any pattern. If *same_as* is specified, the system continues to prompt for the **LEVEL** and the address that has the particular pattern.

PAD SUPPORT

If the address is not billing or directory assistance, specifies if packet assembler/disassembler (PAD) support should (*yes*) or should not (*no*) be enabled. If enabled, the terminal or host using this address requires X.25 packets to be assembled/disassembled while entering/leaving the network. Enter *yes* if the address is to be associated with an X.25, X.25P, or X.75 module port and if asynchronous endpoints are to originate calls to this address.

Parameters *(continued)***SAME AS WHICH ADDRESS**

If **ORIGINATING GROUP NAME SECURITY PATTERN(S)** is *same_as*, a heading that prompts for the **LEVEL** and the **ADDRESS** of the particular originating group security pattern. The *same_as* option is not supported for international addresses.

SERVICE AREA

If **TYPE** is *numeric* or *both*, a three-digit number ranging from 000 to 999 that is equivalent to an *exchange*.

SERVICE REGION

If **TYPE** is *numeric* or *both*, a three-digit number ranging from 000 to 999 that is equivalent to an *area*.

SPACE IN BYTES FOR BILLING HELD DATA

If **LEVEL** is *local* and **MNEMONIC ADDRESS** is *billing*, specifies the amount of shared memory in bytes that is allocated to store billing records when the billing call is down. The value is stored in the *sysgen* file and is read each time the billing address is restored.

SUPPRESS DCC TO X25 PDN

For X.25 service, if **LEVEL** is *network* and **TYPE** is *numeric* or *both*, and the address format adheres to the X.121 North American Numbering Plan (NANP), specifies whether (*yes* or *no*) the Data Country Code (DCC), which is the first three digits of the DNIC, is to be included in the destination address that is to be used from the X.25 module to the PDN. The DCC should be included (*yes*) if the destination address from the X.25 module to the PDN is not to include a DCC; the DCC should not be included (*no*) if the destination address from the X.25 module to the PDN is to include a DCC.

For X.25P service, this parameter is administered as *no* because DCC suppression does not apply to X.25P service.

For X.75 service, this parameter is administered as *no* because it is specified with **enter gateway**.

SUPPRESS PREFIX TO X25 PDN

For X.25 service, if **LEVEL** is *network* and **TYPE** is *numeric* or *both*, specifies whether (*yes* or *no*) the network prefix is to be included in the destination address that is to be used from the X.25 module to the PDN. The network prefix should be included (*yes*) if the destination address from the X.25 module to the PDN is not to include a prefix; the network prefix should not be included (*no*) if the destination address from the X.25 module to the PDN is to include a prefix.

For X.25P service, this parameter is administered as *no*. Prefix suppression does not apply to X.25P service.

For X.75 service, this parameter is administered as *no* because it is specified with **enter gateway**.

enter address

Parameters *(continued)*

TYPE

Specifies if the address being entered is to be represented in an *numeric* form or in a *mnemonic* form, or in *both* a numeric and a mnemonic form.

USE HIGH LEVEL PROTOCOL

If **PAD SUPPORT** is yes, specifies if a high level protocol should (yes) or should not (no) be used in the call request packet for X.25, X.25P, and X.75 calls associated with the address.

X.3 PROFILE ID

If **PAD SUPPORT** is yes, a string of 1 to 20 characters specifying the X.3 terminal user profile identifier for all users accessing the X.25 host associated with the address; or one of three profiles delivered with the system: *simple*, *transparent*, or *mbit*.

```
CC0> enter
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]: +
TYPE [x121, mnemonic, both: +(mnemonic)]: both
MNEMONIC ADDRESS [up to 8 chars]: K11
ENDPOINT NUMBER OR RANGE [0000-9999]: 5411
PAD SUPPORT [yes, no: +(no)]: +
CLOSED USER GROUP PROFILE ID [up to 8 chars, none: +(none)]: compctr
DIRECTORY ENTRY [up to 30 chars double quoted, none: +(none)]: +
GROUP(S) [up to 4 groups separated by commas, none: +(none)]:
    tyr,cpmr
ORIGINATING GROUP NAME SECURITY PATTERN(S)
    [comma-separated pattern list, same_as, none: +(none)]:
        wizard
INITIAL SERVICE STATE [in, out: +(out)]: +
LEVEL [network, area, exchange, local, speedcall: +(local)]: 
CC0>
```

SCREEN 3-4. Prompted Entry: Entering Numeric and Mnemonic Address Information

remove address

The **remove address** command enables you to prevent calls from being completed to a device using the service address by taking the address out of service. In-progress calls are not affected and other addresses that identify the destination can still initiate calls.

A mnemonic or an X.121 address can be removed. If the address was entered in both mnemonic and X.121 forms, only one form must be specified. The system automatically takes both addresses out of service.

Syntax

You can input **remove address** in prompted or one-line entry.

```
CC0> remove
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]:
If LEVEL is "network":
TYPE [mnemonic, nanp_dnic, dnic_ntn_intl, cc_nsn_intl, tcc_nsn_intl]:
ADDRESS:
```

Parameters

This section contains explanations of parameters used in the **remove address** prompting sequence that differ from those used in **enter address**.

ADDRESS

A numeric or alphanumeric string indicating the address to be removed. (A mnemonic address includes a network, area, exchange, and local service address; an X.121 address includes a DNIC, service region, service area, or endpoint number or range.)

TYPE

If **LEVEL** is *network*, specifies the numbering plan format to which the address that is to be removed from service adheres: mnemonic (*mnemonic*), X.121 North American (*nanp_dnic*), X.121 International (*dnic_ntn_intl*), or E.164 (*cc_nsn_intl* or *tcc_nsn_intl*).

```
CC0> remove
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]: +
ADDRESS: KI1
CC0>
```

SCREEN 3-5. Prompted Entry: Removing an Address from Service

```
CC0> remove address local KI1
```

SCREEN 3-6. One-line Entry: Removing an Address from Service

restore address

The **restore address** command enables you to route calls to the device associated with the service address by putting the address in service. A mnemonic or an X.121 address can be restored. If the address was entered in both mnemonic and X.121 forms, only one form must be specified. The system automatically puts both addresses back into service.

Syntax

You can input **restore address** in prompted or one-line entry.

```
CC0> restore
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]:
If LEVEL is "network":
TYPE [mnemonic, nanp_dnic, dnic_ntn_intl, cc_nsn_intl, tcc_nsn_intl]:
ADDRESS:
```

Parameters

This section contains explanations of parameters used in the **restore address** prompting sequence that differ from those used in **enter address**.

ADDRESS

A numeric or alphanumeric string indicating the address to be restored. (A mnemonic address includes a network, area, exchange, and local service address; an X.121 address includes a DNIC, service region, service area, or endpoint number or range.)

TYPE

If **LEVEL** is *network*, specifies the numbering plan format to which the address, which is to be restored to service, adheres: mnemonic (*mnemonic*), X.121 North American (*nanp_dnic*), X.121 International (*dnic_ntn_intl*), or E.164 (*cc_nsn_intl* or *tcc_nsn_intl*).

```
CC0> restore
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall: +(local)]: +
ADDRESS: K11
CC0>
```

SCREEN 3-7. Prompted Entry: Restoring an Address to Service

```
CC0> restore address local K11
```

SCREEN 3-8. One-line Entry: Restoring an Address to Service

verify address

The output of the **verify address** command enables you to check service addresses previously entered in the database. If a service address has *both* a mnemonic and an X.121 address form, entry of either form invokes the report.

In addition, if the entire address is not known or if a list of addresses is required, **verify address** enables you to enter a pattern to match addresses. Addresses are displayed from the highest to the lowest level, with mnemonic addresses listed alphabetically followed by X.121 addresses listed numerically. If a pattern matches both the mnemonic and X.121 address forms for a single address, the address appears twice—once alphabetically with other mnemonic addresses and once numerically with other X.121 addresses.

Syntax

You can input **verify address** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall, all: +(all)]:
ADDRESS [address, pattern, all: +(all)]:
```

Parameters

This section contains explanations of parameters used in the **verify address** prompting sequence that differ from those used in **enter address**.

ADDRESS

A numeric or alphanumeric string specifying the address to be verified; or the word *all* meaning every address; or a particular *pattern* to be matched.

For a further explanation of the parameters that can constitute an address, refer to the detailed explanations in **enter address**. (A mnemonic address includes a network, area, exchange, and local service address; an X.121 address includes a DNIC, service region, service area, or endpoint number or range.)

LEVEL

Except for being able to specify the word *all*, meaning every level, the **LEVEL** parameter definition for **verify address** is the same as that for **enter address**.

```
CC0> verify
OBJECTS [...address...]: address
LEVEL [network, area, exchange, local, speedcall, all: +(all)]: local
ADDRESS [address, pattern, all: +(all)]: K11
<report output>
```

SCREEN 3-9. Prompted Entry: Verifying Address Information

```

CC0> verify address all all
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify address all all
X.121 INTERNATIONAL ADDRESS DNIC+NTN: 2222035
LEVEL: network SERVICE STATE: in
PAD SUPPORT: no
DIRECTORY: none
SECURITY: none
GROUP: x7510p2
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify address all all
X.121 INTERNATIONAL ADDRESS DNIC+NTN: 333444555
LEVEL: network SERVICE STATE: out
PAD SUPPORT: no
DIRECTORY: none
SECURITY: none
NO GROUPS ASSIGNED
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify address all all
E.164 ADDRESS CC+NSN: 9
LEVEL: network SERVICE STATE: in
PAD SUPPORT: no
DIRECTORY: none
SECURITY: none
GROUP: x7510p2
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify address all all
E.164 ADDRESS CC+NSN: 912
LEVEL: network SERVICE STATE: in
PAD SUPPORT: no
DIRECTORY: none
SECURITY: none
GROUP: trkanice
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify address all all
MNEMONIC ADDRESS: X.121 NANP ADDRESS: 2222
LEVEL: network SERVICE STATE: in
PAD SUPPORT: no
DIRECTORY: none PREFIX SUPPRESSION: no
SECURITY: none
DCC SUPPRESSION: no
GROUP: trkanice
CC0>

```

SCREEN 3-10. One-line Entry/Output: Verifying All Address Information

```
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify address local 1234
X.121 ADDRESS: 1234          MODULE TYPE: ty12
MODULE ADDRESS: 123          PORT: 1
INFO: This EPN or range is not a service address.
      Use the verify module command for more information.
CC0>
```

SCREEN 3-11. Unsuccessful Output: An X.121 Address Associated with a TY Port

The example illustrates output generated when an endpoint number or range input is not a valid service address. Each report furnishes enough information to track the endpoint number. Reports for a particular module show the number identifying the module's component (port number, channel set range, board number). These reports are not printed when a pattern is entered at the **ENDPOINT NUMBER** prompt.

Report Fields

The following table correlates each report field heading shown in the output of **verify address** to the parameter for which you are prompted in **enter address** or **change address**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	Corresponding Parameter Name
CUG PROFILE	CLOSED USER GROUP ID
DCC SUPPRESSION	SUPPRESS DCC TO X25 PDN
* DIAL STRING	DIAL STRING ENTRY
* DIAL STRING <SHOWN/NOT SHOWN> AS DIRECTORY ASSISTANCE	DISPLAY DIAL STRING DIRECTORY ASSISTANCE
DIRECTORY	DIRECTORY ENTRY
GROUP	GROUP(S)
HIGH LEVEL PROTOCOL	HIGH LEVEL PROTOCOL
LEVEL	LEVEL
MNEMONIC ADDRESS	MNEMONIC ADDRESS/ NEW MNEMONIC ADDRESS
PAD SUPPORT	PAD SUPPORT
PREFIX SUPPRESSION	SUPPRESS PREFIX TO X25 PDN
SECURITY	ORIGINATING GROUP NAME SECURITY PATTERN(S)
SERVICE STATE	INITIAL SERVICE STATE
** X.121 INTERNATIONAL ADDRESS <DNIC+NTN/CC+NSN/TCC+NSN>	X.121 INTERNATIONAL FORMAT [1,2,3]
X.121 <NANP> ADDRESS	DNIC/NEW DNIC SERVICE REGION/NEW SERVICE REGION SERVICE AREA/NEW SERVICE AREA ENDPOINT NUMBER OR RANGE/ NEW ENDPOINT NUMBER OR RANGE
X.3 PROFILE	X.3 PROFILE ID

* Not shown in this report; applies to parameter option that can be specified for other address levels/types.

** BNS-2000 VCS output only.

System Responses

This section contains system responses for the **address** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Cannot access sysgen file.

When specifying the number of bytes to be allocated in shared memory for billing records, the sysgen file must be accessible. The sysgen file cannot be accessed.

No addresses are entered.

The **verify** command cannot produce the requested output because addresses have not yet been configured.

No addresses match <pattern>.

The **verify** command cannot produce the requested output because no existing addresses match the specified pattern.

No <level> addresses are entered.

The **verify** command cannot produce the requested output because the specified address level has not been configured.

No <level> addresses match <pattern>.

The **verify** command cannot produce the requested output because no existing address level matches the specified pattern.

The address <addr> is not entered.

The **verify** command cannot produce the requested output because the specified address has not been configured.

INFO:

This EPN or range is not a service address.

Use the verify module command for more information.

The **verify** command cannot produce the requested output because the specified EPN/EPNs are not valid. See Unsuccessful Output in **verify address**.

INPUT ERROR:

A DNIC must be 4 digits.

A DNIC must consist of four numbers.

A maximum of two hex digits are allowed.

Only two hexadecimal characters (0 to f) can be entered.

A mnemonic <level> address cannot be <num> digits.

The mnemonic address entered cannot contain the specified number of characters/digits. See the discussion of mnemonic address in the Parameters section of **enter address**.

A range is not allowed.

A range of numbers is not allowed.

INPUT ERROR: *(continued)*

A service area/region must be 3 digits.

A service area or region must consist of three numbers.

A speedcall address is not allowed in a dialstring.

A speedcall address must be specified as *speedcall* when at the **LEVEL** prompt.

An EPN must be 4 digits.

An EPN consists of four numbers. A range of EPNs consists of two sets of four numbers separated by a dash.

At least one hex digit is required.

A minimum of one hexadecimal digit must be entered at the **HIGH LEVEL PROTOCOL** prompt.

At most 7 digits of address can be entered.

This error will occur if more than seven characters are entered when deleting an address of network level and of type *cc_nsn_intl* or *tcc_nsn_intl*.

Both the low and high EPN in a range must be 4 digits.

An EPN consists of four numbers. A range of EPNs consists of two sets of four numbers separated by a dash.

CUG profile <id> is a gateway CUG profile.

The specified profile is not the correct type of CUG profile.

CUG profile <id> is not entered.

Information has not been configured in the database for the indicated CUG profile ID.

Duplicate group entered in list.

The same group name has been entered twice.

Group <name> does not contain <X.25/X.25P/X.75> modules.

The group specified was previously assigned to a different module type. Hardware types cannot be mixed within a group.

Group <name> is an originating group.

The group specified must be a receiving or two-way group. Specify a group to correspond with the type of service selected.

Group <name> is not a receiving or 2way group, as required.

The group must be a receiving or two-way group to correspond with the service type selected.

Group <name> is not entered.

The specified group name has not been configured.

Input string too long.

The parameter specification made contains too many characters.

Lists must be entered as follows: item1, item2, item3, item4 ...

List items have not been entered correctly. Enter each item correctly and continue the command.

INPUT ERROR: *(continued)***No security assigned to <addr>.**

The address entered at the **SAME AS WHICH ADDRESS** prompt must have an originating group security pattern.

Not a valid hex number <num>.

The hexadecimal digit is not valid.

Only 2 asterisks allowed per level in <pattern>.

The pattern entered contains more than the allowed number of two asterisks (**) per level.

Only 4 levels allowed in <pattern>.**Where <pattern> is one of the patterns in a list.**

The pattern entered contains more than the allowed number of levels for a pattern in a list.

Only 16 characters allowed per level in <pattern>.

The pattern entered contains more than the allowed number of characters per level.

Range must be in the form nnnn-nnnn; no spaces permitted.

The range entered might have the correct number of digits; but it contains one or more spaces.

The EPN <num> is not entered as a range.

Enter a single, four-digit number.

The <first/last> digit of the DNIC cannot match the international prefix or the first digit of the modifier.

The first and/or the fourth numbers used in the DNIC cannot match the international prefix or the first digit of the modifier.

The first EPN in a range must be less than the second EPN.

The first EPN in the range entered is greater than the second EPN entered. An EPN range must be entered with the lower EPN in the range as the first number and the higher EPN as the second number, for example *1020-1030*.

The special <type> address must be local and mnemonic.

If **type** is billing or ? (for directory assistance), enter a local mnemonic address.

This address is already entered as a <mnemonic/numeric> address

The address entered is already administered as the specified address type.

This address must be removed from service.

The address must be taken out of service.

This EPN must match the low EPN of the entered range <num-num>.

The EPN entered does not match the low EPN of the entered range.

This EPN or range conflicts with existing logical device address <addr>.

The EPN or range entered is already configured as an EPN for a port. Enter a different EPN or range, or delete the existing address.

INPUT ERROR: *(continued)*

This EPN or range conflicts with existing <level> address <addr>.

The EPN entered conflicts with the specified address level that has already been configured.

This EPN range must match the entered EPN range <num-num>.

The EPN range entered at the **ENDPOINT NUMBER OR RANGE** prompt must match the address entered at the local level. You cannot enter any number or range that does not exactly equal the local address range.

This is a logical device address.

The address specified is one that has already been associated with a logical device.

This is the <level> <mnemonic/x121> address for this node.

The address specified has already been assigned to the node.

This <level> <mnemonic/x121> address is not entered.

The specified address has not been configured.

This <mnemonic/x121> address is already entered.

The specified address has already been configured.

X.3 profile <id> is not entered.

The specified X.3 profile identifier is not configured. Configure it using **enter profile**.

<keyword> may not be entered in a list.

The words *none* and *same_as* are reserved words that cannot be specified in a list.

REMOVE/RESTORE FAILED:

remove address <level> <addr> failed

Billing did not receive request to remove billing address.

The specified billing address cannot be removed because the command processor could not send a message to the billing process.

remove address <level> <addr> failed

This address is already out of service.

The specified address has already been taken out of service.

restore address local billing failed

Billing did not receive request to restore billing address.

The specified billing address could not be removed because the command could not send a message to the billing process.

restore address <level> <addr> failed

Cannot restore address <addr> without a group assignment.

The specified address cannot be restored to service unless a group has been specified.

restore address <level> <addr> failed

This address <addr> is already in service.

The specified address is already in the requested service state.

WARNING:

Cannot access sysgen file.

When deleting information pertaining to a particular billing address, this message appears when the sysgen file cannot be accessed.

The <level> level address in this dialstring is not entered.

Enter the address level required for the dial string and retry the command.

NO KEY PHRASE:

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file could have been removed from the disk.) Contact your local support group.

alarm command set

The following commands are related to the **alarm** command set.

Verb/Object	Related Verbs	Related Objects
retire alarm	change dstat enter verify	node
	route	output

retire alarm

The **retire alarm** command enables you to retire critical and major audible alarms that the system generates if the Alarm Activator Unit (AAU) is configured. Minor audible alarms are self-retiring. The system generates audible alarms whenever it detects problems.

NOTE: Audible alarms can also be retired via a push-button switch on the AAU; however, the system assumes that the audible alarm is sounding and continues to inhibit any lower level alarms that might otherwise sound.

Syntax

You can input **retire alarm** in prompted or one-line entry.

```
CC0> retire
OBJECTS [alarm]: alarm
```

Parameters

None.

```
CC0> retire
OBJECTS [alarm]: alarm
CC0>
```

SCREEN 3-12. Prompted Entry: Retiring Alarms

```
CC0> retire alarm
```

SCREEN 3-13. One-line Entry: Retiring Alarms

System Responses

The **retire alarm** command does not have any associated system responses.

backup and retrieve command set

The following commands are related to the **backup** and **retrieve** command set.

Verb	Object	Related Verbs/Objects
backup	active	dstat cc verify node
	host	verify address
	save	dstat cc verify node
	standby	dstat verify node
	tape	dstat cc verify node
retrieve	host	verify address
	save	dstat cc verify node
	tape	dstat cc verify node

backup active

The **backup active** command enables you to copy the database to the backup area of the active disk. The command creates an archive of the configuration and performs an automatic verification of data. Before issuing any **backup** command, ensure that the database is not currently being modified via an **enter**, **change**, or **delete** command.

Syntax

You can input **backup active** in prompted entry or one-line entry.

```
CC0> backup
OBJECTS [...active...]: active
```

Parameters

None.

```
CC0> backup
OBJECTS [...active...]: active
<system output>
```

SCREEN 3-14. Prompted Entry: Copying Files to the Backup Area of the Active Disk

```
CC0> backup active
Creating configuration archive
Verifying configuration archive
CC0>
```

SCREEN 3-15. One-line Entry/Output: Copying Files to the Backup Area of the Active Disk

backup host

The **backup host** command enables you to copy the database to a specified host. Appropriate responses confirm that files are being uploaded. Before issuing any **backup** command, ensure that the database is not currently being modified via an **enter**, **change**, or **delete** command.

Syntax

You can input **backup host** in prompted entry or one-line entry.

```
CC0> backup
OBJECTS [...host...]: host
HOST ADDRESS:
```

Parameters

This section contains explanations of parameters used with **backup host**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

HOST ADDRESS

A string of 1 to 35 characters representing the address of the host to which the files are to be uploaded. The format of the host address is: *[[[network]/]area/]exchange/]local*.

```
CC0> backup
OBJECTS [...host...]: host
HOST ADDRESS: 3456
<system output>
```

SCREEN 3-16. Prompted Entry: Uploading Files to a Host

```
CC0> backup host 3456
CALL ANSWERED
UPLOADING TO 3456 the file /etc/cfdata
u <number>
UPLOADING TO 3456 the file /etc/sysgen
u <number>
UPLOADING TO 3456 the file /etc/comments
u <number>
UPLOAD COMPLETED
CC0>
```

SCREEN 3-17. One-line Entry/Output: Uploading Files to a Host

backup save

The **backup save** command enables you to copy the database to the save area of a specified disk. The command creates an archive of the configuration and performs an automatic verification of data. The save area is an optional storage area on a hard disk that is the target of **backup save**. The save area is never automatically written to or read from. When **backup save** is executed, the previous contents of the save area are erased.

Warning: Pressing during the backup can corrupt the save area of the disk. Also, before issuing any **backup** command, ensure that the database is not currently being modified via an **enter**, **change**, or **delete** command.

Syntax

You can input **backup save** in prompted entry or one-line entry.

```
CC0> backup
OBJECTS [...save...]: save
TO DISK [0,1]:
```

Parameters

This section contains explanations of parameters used with **backup save**. Refer to Syntax for the prompting sequence and parameter options.

TO DISK

A number (0 or 1) specifying the device to which data is to be saved; where 0 is the number of the primary disk residing in the lowest shelf and/or slot; and 1 is the number of the secondary disk residing in the higher shelf and/or slot.

```
CC0> backup
OBJECTS [...save...]: save
TO DISK [0,1]: 0
<system output>
```

SCREEN 3-18. Prompted Entry: Copying Files to the Save Area of Disk 0

```
CC0> backup save 0
Creating configuration archive
Verifying configuration archive
CC0>
```

SCREEN 3-19. One-line Entry/Output: Copying Files to the Save Area of Disk 0

backup standby

The **backup standby** command enables you to copy the database to the backup area of the standby disk. The command creates an archive of the configuration and performs an automatic verification of data. Before issuing any **backup** command, ensure that the database is not currently being modified via an **enter**, **change**, or **delete** command.

Syntax

You can input **backup standby** in prompted entry or one-line entry.

```
CC0> backup
OBJECTS [...standby...]: standby
```

Parameters

None.

```
CC0> backup
OBJECTS [...standby...]: standby
<system output>
```

SCREEN 3-20. Prompted Entry: Copying Files to the Backup Area of the Standby Disk

```
CC0> backup standby 1
Creating configuration archive
Verifying configuration archive
CC0>
```

SCREEN 3-21. One-line Entry/Output: Copying Files to the Save Area of the Standby Disk

backup tape

The **backup tape** command enables you to copy database files to a specified tape. The command creates an archive of the configuration and performs an automatic verification of data. Before issuing any **backup** command, ensure that the database is not currently being modified via an **enter**, **change**, or **delete** command.

Syntax

You can input **backup tape** in prompted entry or one-line entry. The default is shown in parentheses.

```
CC0> backup
OBJECTS [...tape...]: tape
TO TAPE [0,1: +(0)]:
```

Parameters

This section contains explanations of parameters used with **backup tape**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

TO TAPE

A number (0 or 1) specifying the device to which data is to be saved; where 0 is the number of the primary tape residing in the lowest shelf and/or slot; and 1 is the number of the secondary tape residing in the higher shelf and/or slot.

```
CC0> backup
OBJECTS [...tape...]: tape
TO TAPE [0,1: +(0)]: +
<system output>
```

SCREEN 3-22. Prompted Entry: Copying Files to Tape

```
CC0> backup tape 0
Creating configuration archive
Verifying configuration archive
CC0>
```

SCREEN 3-23. One-line Entry/Output: Copying Files to Tape

retrieve host

The **retrieve host** command enables you to copy the database from a specified host to the backup area of an active disk. When you execute **retrieve host**, responses confirm that files are being downloaded. To use database configuration files retrieved from a host, the system must be rebooted.

Syntax

You can input **retrieve host** in prompted entry or one-line entry.

```
CC0> retrieve
OBJECTS [...host...]: host
HOST ADDRESS:
```

Parameters

This section contains explanations of parameters used with **retrieve host**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

HOST ADDRESS

A string of 1 to 35 characters representing the address of the host from which the files are to be downloaded. The format of the host address is: *[[[network/]area/]exchange/]local*.

```
CC0> retrieve
OBJECTS [...host...]: host
HOST ADDRESS: 3456
<system output>
```

SCREEN 3-24. Prompted Entry: Downloading Files from a Host

```
CC0> retrieve host 3456
CALL ANSWERED
u <number>
DOWNLOADING from 3456 the file /etc/sysgen
u <number>
DOWNLOADING from 3456 the file /etc/comments
u <number>
DOWNLOAD COMPLETED
CC0>
```

SCREEN 3-25. One-line Entry/Output: Downloading Files from a Host

retrieve save

The **retrieve save** command enables you to copy database files from the save area of a specified disk to the backup area of the active disk. The command creates an archive of the configuration and performs an automatic verification of data. To use database configuration files that were just retrieved, the system must be rebooted.

Syntax

You can input **retrieve save** in prompted entry or one-line entry.

```
CC0> retrieve
OBJECTS [...save...]: save
FROM DISK [0,1]:
```

Parameters

This section contains explanations of parameters used with **retrieve save**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

FROM DISK

A number (0 or 1) specifying the device to which data is to be saved; where 0 is the number of the primary disk residing in the lowest shelf and/or slot; and 1 is the number of the secondary disk residing in the higher shelf and/or slot.

```
CC0> retrieve
OBJECTS [...save...]: save
FROM DISK [0,1]: 0
<system output>
```

SCREEN 3-26. Prompted Entry: Copying Files from the Save Area of Disk 0 to the Active Disk

```
CC0> retrieve save 0
Creating configuration archive
Verifying configuration archive
CC0>
```

SCREEN 3-27. One-line Entry/Output: Copying Files from the Save Area of Disk 0 to the Active Disk

retrieve tape

The **retrieve tape** command enables you to copy database files from a specified tape to the backup area of an active disk. The command creates an archive of the configuration and automatically verifies the data. To use a database that was retrieved, the system must be rebooted.

Syntax

You can input **retrieve tape** in prompted entry or one-line entry. The default is shown in parentheses.

```
CC0> retrieve
OBJECTS [...tape...]: tape
FROM TAPE [0,1: +(0)]:
```

Parameters

This section contains explanations of parameters used with **retrieve tape**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

FROM TAPE

A number (0 or 1) specifying the device to which data is to be saved; where 0 is the number of the primary tape residing in the lowest shelf and/or slot; and 1 is the number of the secondary tape residing in the higher shelf and/or slot.

```
CC0> retrieve
OBJECTS [...tape...]: tape
FROM TAPE [0,1: +(0)]: +
<system output>
```

SCREEN 3-28. Prompted Entry: Retrieving Files from Tape

```
CC0> retrieve tape 0
Creating configuration archive
Verifying configuration archive
CC0>
```

SCREEN 3-29. One-line Entry: Retrieving Files from Tape

System Responses

This section contains system responses for the **backup** and **retrieve** command set. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

A command level error occurred (50).

Archive does not exist (34).

Cannot allocate additional memory: <message text> (1028)

Cannot determine status of file <file name>: <message text> (1010)

Cannot open the device: <message text> (1014)

Cannot open the file: <message text> (1012)

Cannot read archive data: <message text> (1024)

Cannot read archive header: <message text> (1022)

Cannot read the file <file name>: <message text> (1018)

Cannot write archive data: <message text> (1026)

Cannot write archive header: <message text> (1022)

Cyclic redundancy check of archive header failed (38).

Terminated at user request (5).

The file <file name> is larger than expected (32).

The file <file name> was modified during archive creation (30).

The seek system call failed: <message text> (1016)

Verification of archive header failed (36).

INPUT ERROR:

Host Does Not Exist

An invalid destination was given in response to the **HOST ADDRESS** prompt. Check the service address of the host using **verify address**.

Not an Allowed Value

The value specified is not within the allowed range.

NO KEY PHRASE:

Database in shared memory was not reliable.

The memory version was bad. Reboot the node to store a clean copy in memory. Check changes made since the last **sync**; if they were lost, re-enter them.

cc command set

The following commands are related to the **cc** command set.

Verb/Object	Related Verbs	Related Objects
dstat cc	change dstat enter verify	node
	backup	save standby
	install	backout disklayout registration release
	retire	alarm

dstat cc

The **dstat cc** command reports the status of the Control Computer complex, which includes the active and standby Control Computers (with Disk/Tape Subsystems) and the MRC, and the software release and build number.

Syntax

You can input **dstat cc** in prompted or one-line entry.

```
CC0> dstat  
OBJECTS [...cc...]: cc
```

Parameters

None.

```
CC0> dstat  
OBJECTS [...cc...]: cc  
<report output>
```

SCREEN 3-30. Prompted Entry: Displaying Control Computer Status

```
CC0> dstat cc
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat cc

ACTIVE CONTROL COMPUTER: 0 (MODADDR=78)
STANDBY CONTROL COMPUTER: 1 (MODADDR=94)
  STANDBY STATUS REPORTED BY STANDBY: active
  STANDBY STATUS REPORTED BY MRC: in-service

MRC STATUS: in-service

ACTIVE DISK: 0
  STATUS: in-service
  ROOT DEVICE: /dev/dskp0
  MAIN PARTITION:      <Release> <Build>
  STAGING PARTITION:  <Release> <Build>      <(needs validation)>
  BACKUP AREA: <Release> <Build>
  SAVE AREA:   last backup at <yy-mm-dd> <hh:mm:ss>

STANDBY DISK: 1
  STATUS: standby
  MAIN PARTITION:      <Release> <Build>
  STAGING PARTITION: empty
  AUTOMATIC BACKUP: on
  BACKUP AREA: <Release> <Build>
  SAVE AREA:   last backup at <yy-mm-dd> <hh:mm:ss>

CC0>
```

SCREEN 3-31. One-line Entry/Output: Displaying Control Computer Status

Report Fields

ACTIVE BACKUP AREA

The content of the backup area on the active disk. If a valid header exists, the string *last backup at <yy-mm-dd hh:mm:ss>* is displayed. If a valid header does not exist, the word *empty* appears.

ACTIVE CONTROL COMPUTER

Indicates if Control Computer 0 or 1 is functioning as active; and the actual module address of the controller board.

ACTIVE DISK

The disk (0 or 1) from which the active Control Computer was booted.

ACTIVE DISK STATUS

The status (*in-service*, *failed*, or *unknown*) of the active disk which indicates whether the Control Computer can successfully perform read/write operations on the disk.

ACTIVE SAVE AREA

The content of the save area on the active disk. If a valid header exists, the string *last backup at <yy-mm-dd hh:mm:ss>* is displayed. If a valid header does not exist, the word *empty* appears.

AUTOMATIC BACKUP

If the node is configured for dual disks, indicates whether the automatic backup is *on* or *off*.

MAIN PARTITION

This is the partition on the active disk that is booted by default. It is also the partition on the standby disk that would be active if the controller automatically booted from the standby disk. This is always partition 0.

MRC STATUS

The status of the MRC as reported by the MRC to the active Control Computer: *in-service*, the MRC is available and is up and running; *failed*, the MRC is not available nor is it up and running; or *none*, a node is not configured for an MRC.

ROOT DEVICE

The logical device that contains the file system currently used by the active Control Computer; where: *dskp* represents the primary disk, *dsks* represents the secondary disk, and *0* represents partition 0.

STAGING PARTITION

The partition on the active disk and the standby disk to which new release software is written. This is always partition 1 on the disks. If a valid software release does not exist, the word *empty* appears.

STANDBY BACKUP AREA

If **STANDBY DISK** is other than *none*, indicates the content of the backup area on the standby disk. If a valid header exists, the string *last backup at <yy-mm-dd hh:mm:ss>* is displayed. If a valid header does not exist, the word *empty* appears.

Report Fields *(continued)*

STANDBY CONTROL COMPUTER

Indicates if Control Computer *0* or *1* is functioning as a standby; and if either is, the actual module address of the controller board. If *none* is displayed, a redundant Control Computer was not entered into the database via **enter node**.

STANDBY DISK

The disk (*0* or *1*) from which the active Control Computer was not booted; or the word *none* meaning dual disks are not configured.

STANDBY DISK STATUS

If **STANDBY DISK** is other than *none*, shows the status (*in-service* or *failed*) of the standby disk. This status indicates whether the Control Computer can successfully perform read/write operations on the disk.

STANDBY SAVE AREA

If **STANDBY DISK** is other than *none*, indicates the content of the save area on the standby disk. If a valid header exists, the string *last backup at <yy-mm-dd hh:mm:ss>* is displayed. If a valid header does not exist, the word *empty* appears.

STANDBY STATUS REPORTED BY MRC

The status of the standby Control Computer as reported to the active Control Computer by the MRC: *in-service*, the MRC is receiving regular sanity pulses from the standby Control Computer; *failed*, the MRC is not receiving regular sanity pulses from the standby Control Computer; *unknown*, the MRC status is "failed".

STANDBY STATUS REPORTED BY STANDBY

The status (*active*, *standby*, *test*, or *dead*) of the standby Control Computer as reported to the active Control Computer by the standby. *Test* indicates the Control Computer has been reset and is undergoing diagnostics.

System Responses

This section contains system responses for **dstat cc**.

NO KEY PHRASE:

Active controller address error.

Use **change node** to make the active and standby Control Computer addresses consistent with the actual hardware.

Can't open sysgen file.

The command processor cannot access the sysgen file to obtain needed information. Contact your Lucent support group.

circuits command set

The following commands are related to the **circuits** command set.

Verb/Object	Related Verbs	Related Object
display circuits initialize circuits	dstat remove restore	switch

display circuits

The **display circuits** command enables you to output virtual circuit information for a particular module/channel pair. The output reflects information extracted from local Switch module and route tables regarding data and signal packet transmission. This information, shown in terms of *user* and *supr* (*supervisory*) fields, details data channel information and signal channel information, respectively. The information output in each field identifies an *address* (those fields suffixed with *addr* or *dest*), particular *channels* (those fields suffixed with *mask* or *flag*), or packet counts (those fields suffixed with *cnt*).

Each channel referred to represents two entries in the Switch module route table (unless common signaling is used). One entry tells the Switch how to route data packets; the other entry routes signaling information (used during call setup/takedown and attention sessions). If common signaling is used, the *user addr* and *supr addr* are the same.

Syntax

You can input **display circuits** in prompted or one-line entry.

```
CC0> display
OBJECTS [...circuits...]: circuits
MODULE ADDRESS.CHANNEL:
```

Parameters

This section contains explanations of parameters used in the **display circuits** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

MODULE ADDRESS.CHANNEL

A single set of numbers identifying the address occupied by the module/channel pair for which information is to be displayed. For example: *<module.channel>*. If the module is installed directly in the node, the address is *<module.channel>*. If the module resides in a concentrator, the address is *<concentrator/module.channel>*.

If the module resides in a concentrator, the address can be specified in physical or backplane format. When specified in physical format (*xxx/xxx.xxxx*; where: *x* is a digit), the concentrator and module must be in service. The system then translates the address into the backplane format. When specified in backplane format (*xxx.xxxx*; where: *x* is a digit), the concentrator and module can be in any service state. However, before the system can translate the address into physical format, the module and channel must both be in service.

```
CC0> display
OBJECTS [...circuits...]: circuits
MODULE ADDRESS.CHANNEL: 4.3
```

SCREEN 3-32. Prompted Entry: Displaying Circuit Information (Physical Format)

```
CC0> display circuits 4.3
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M display circuits 4.3
  backplane address: module 4 channel 3
    user addr = 1009      supr addr = 1473
    user mask = 12        supr mask = 12
    user dest = 117.8     user flag = 0      user cnt = 580
    supr dest = 14.1406   supr flag = 0      supr cnt = 6
CC0>
```

SCREEN 3-33. One-line Entry/Output: Displaying Circuit Information (Physical Format)

Report Fields

backplane address

The translation of the physical address, entered on the command line, into a backplane address. If the address cannot be translated, a ? is displayed. If a backplane address was entered, this field is not displayed unless translation into a physical address cannot be executed.

physical address*

The translation of the backplane address, entered on the command line, into a physical address. If the address can be translated, it is displayed. If the address cannot be translated, or can only be partially translated, a ? is displayed. If a physical address was entered on the command line, this field is not displayed and the backplane address is output.

supr addr

The base module address in the switch route table for the supervisory signal channel. If the module address was entered in backplane format, it is the switch address of the first route table entry for the LIM. If the module address was entered in physical format, it is the switch address of the first channel for the specified concentrator module.

* This field does not appear on the output illustrated; it does appear during other iterations of the command.

Report Fields *(continued)*

supr cnt

The count of supervisory (signal) packets transmitted since the module.channel was last put into service.

supr dest

The signal or supervisory destination module and channel address in physical format (if possible).

supr flag

Indicates a 0 for a normal channel (used for user or supervisory packets) or a 2 for a switch common command channel (used to transmit control packets). Indicates a 1 for an individual command channel for the Switch in slot 1 (modular cabinet) or slot A (Series M2 Shelf) and a 4 for an individual command channel for the Switch in slot 2 (modular cabinet) or slot B (Series M2 Shelf).

supr mask

The maximum number of supervisory signal channels which is the highest channel number (beginning with 0) for this module minus one.

user addr

The base address in the switch route table for the user data channel. If the module address was entered in backplane format, it is the switch address of the first route table entry for the LIM. If the module address was entered in physical format, it is the switch address of the first channel for the specified concentrator module.

user cnt

The count of user (data) packets transmitted since the module.channel was last put into service.

user dest

The data or user destination module.channel address in physical format (if possible).

user flag

Indicates a 0 for a normal channel (used to transmit user or supervisory packets) or a 2 for a switch common command channel (used to transmit control packets). Indicates a 1 for an individual command channel for the Switch in slot A (Series M2 Shelf) or slot 1 (modular cabinet) and a 4 for an individual command channel for the Switch in slot B (Series M2 Shelf) or slot 2 (modular cabinet).

NOTE: Command channels send instructions (**read** and **write**) to the Switch. Command channel packets are routed like other packets; but the Switch interprets command codes in these packets. Both user data and supervisory control signals are transmitted over normal channels. Channels 5 and 6 of the control module are also used as command channels.

user mask

The maximum number of user data channels which is the highest channel number for this module.

initialize circuits

The **initialize circuits** command enables you to initialize the memory on the Switch module and to reboot the system. The execution of this command interrupts all currently active calls.

Syntax

You can input **initialize circuits** in prompted or one-line entry.

```
CC0> initialize
OBJECTS [...circuits...]: circuits
```

Parameters

None.

```
CC0> initialize
OBJECTS [...circuits...]: circuits
<system output>
```

SCREEN 3-34. Prompted Entry: Initializing Switch Module Memory and Rebooting the System

initialize circuits

```
CC0> initialize circuits
*** Trying To Boot From Primary Disk ***

A RECOVERY REBOOT
  Reason: SOFTWARE INITIATED BY ADMINISTRATOR

Active CC
Loading text
Loading data
Clearing bss

Booted from Device: 5/0
Local Memory Size = <number>
Available Memory: <number> End of Supervisor: <number>
```

```
          <Product> <Release> <System>
<* Registered trademark of Lucent Technologies>
Copyright <year(s)> Lucent Technologies
All Rights Reserved
```

```
Notice - Notwithstanding any other lease or license agreement
that may pertain to, or accompany the delivery of, this
computer software, the rights of the Government regarding its
use, reproduction and disclosure are as set forth in
Government Contract No. <number>
```

```
Unpublished - rights reserved under the
copyright laws of the United States
```

```
<any appropriate alarms would appear here>
```

```
BOOTING CC0>
```

SCREEN 3-35. One-line Entry/Output: Initializing Switch Module Memory and Rebooting the System*

* The controller mode switch must be in the ENABL position.

System Responses

The **initialize circuits** command does not have any associated system responses.

This section contains system responses for **display circuits**. It is organized by the key phrase that prefaces the response.

INPUT ERROR:

Concentrator Does Not Exist: <addr>

Information is not entered for the concentrator at the specified address.

Invalid Concentrator Address: <addr>

The specified concentrator address is incorrect. Enter the correct address and retry the command.

Invalid Module Address.Channel

The address entered is not valid. Enter the module address and channel correctly and retry the command.

Module Is Not In Service: <addr>

The module at the specified address is out of service. Use **restore** to put the module into service, then retry the command.

Parameter out of Range: <addr>

The address entered is prohibited. Enter a valid address and retry the command.

NO KEY PHRASE:

Can't get module info

Can't get supr channel info

Can't get user channel info

The previous responses appear on report output if the command processor cannot retrieve the specified information.

Channel out of range

This response appears on report output if the channel specified is not within the appropriate channel range.

comment command set

The following commands are related to the **comment** command set.

Verb/Object	Related Verbs	Related Objects	Related Component for which Comments Can Be Verified
verify comment	change enter verify	ai	module, port
		aim	port
		bridge	channel
		bsc3270 (sync8)	port
		concentrator	module
		cpm	module
		cpmml	module port
		dkap	module
		e2a	port group
		frm	port
		frm-m2	port virtual-port
		gar	module
		lpm	port
		msm	port
		sam	module port
		samml	module
		sdlc8	port
		shelf	shelf
		slm	port group
		trunk	module
		tsm8	port
		tsmt1	port
		ty	port
		x25	port
		x25p	port
		x75	port

verify comment

The **verify comment** command enables you to display the comments entered for a specified module or its port, channel, or port group. Depending on the type of module for which a comment has been entered, report output shows the module comment and/or the port comments.

Syntax

You can input **verify comment** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...comment...]: comment
MODULE TYPE [<module name(s)>, all: +(all)]:
SEARCH CRITERION [double-quoted string or pattern, all: +(all)]:
```

Parameters

This section contains explanations of parameters used in the **verify comment** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

MODULE TYPE

Specifies that the module or module component for which the comment is to be displayed is an *ai*, *aim*, *bridge*, *bsc3270*, *concentrator*, *cpm*, *cpmml*, *cpmml-hs*, *dkap*, *e2a*, *frm*, *frm-m2*, *gar*, *lpm*, *msm*, *sam*, *samml*, *sdlc8*, *shelf*, *slm*, *trunk*, *tsm8*, *tsmt1*, *ty*, *x25*, *x25p*, or *x75*; or the word *all*, meaning every module entered in the database.

SEARCH CRITERION

A double-quoted string of 1 to 60 characters that specifies the comment entered, a *pattern* to be matched, or the word *all*, meaning every comment entered.

```
CC0> verify
OBJECTS [...comment...]: comment
MODULE TYPE [<module name(s)>, all: +(all)]: ty
SEARCH CRITERION [double-quoted string or pattern, all: +(all)]: +
<report output>
```

SCREEN 3-36. Prompted Entry: Verifying All TY Comments


```
CC0> verify comment ty +
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify comment ty +
  MODULE ADDRESS: 60
  MODULE TYPE: ty12
  COMMENT: Inst 6/92
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify comment ty +
  MODULE ADDRESS: 60
  MODULE TYPE: ty12
  PORT COMMENT
    1 in basement
CC0>
```

SCREEN 3-37. One-line Entry/Output: Verifying All TY Comments

Report Fields

Each report field unique to **verify comment** is defined in the following table.

Report Field Name	Definition
BOARD	Address of the SAM board
COMMENT	Comment entered for the module or port
MODULE ADDRESS	Module address of the indicated module
MODULE TYPE	Hardware type
PORT	If applicable, the module port number

System Responses

This section contains system responses for **verify comment**. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

No comments matched search criterion.

The specified comments cannot be checked because none match the search criterion.

No <modules/comments> are entered.

The output of **verify comment** cannot be generated because module comments are not administered.

No <type> <modules/comments> are entered.

Module comments cannot be checked because that module type is not administered.

connections command set

The following commands are related to the **connections** command set.

Verb/Object	Related Verbs	Related Objects	
display connections	schedule	ai	measurements
dmeas connections	verify	aim	msm
		bridge	sam
		bsc3270	samml
		concentrator	sdlc8
		cpm	slm
		cpmml	trunk
		dkap	tsm8
		e2a	tsmt1
		frm	ty
		frm-m2	x25
		group	x25p
		host	x75
		lpm	

display connections

The **display connections** command gives current connections information for modules, groups, or hosts.

For BNS-2000 systems only, the command output furnishes the appropriate group names for the selected module, group, or host. For segment counts that pertain to the calls established, use **display traffic**.

Syntax

You can input **display connections** in prompted or one-line entry.

```
CC0> display
OBJECTS [...connections...]: connections
TYPE [module, group, host: +(group)]:

If TYPE is "module":
    MODULE ADDRESS [module number, all: +(all)]:

If TYPE is "group":
    GROUP NAME [group name, all: +(all)]:

If TYPE is "host":
    HOST NAME [host name, all: +(all)]:
```

Parameters

This section contains explanations of parameters used in the **display connections** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

GROUP NAME

A string of 1 to 8 characters specifying the name of the group for which data is to be displayed; or the word *all*, meaning every connection associated with every group.

HOST NAME

A string of 1 to 8 alphanumeric characters specifying the name of the host for which data is to be displayed; or the word *all*, meaning every PDD/PVC connection for every host. Since host names are associated with the groups to which they belong (they are entered via **enter group**), PVC information for all modules associated with the host is displayed.

MODULE ADDRESS

For all modules except SAMs, a set of numbers identifying the address of the module.

If the module is installed directly in the node, the address is *<module>*. Where: *module* is the module's node slot number.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the LIM, which connects the concentrator to the module, occupies; and *module* is the slot number the module occupies in the concentrator.

For two-board downloadable modules, specify the address of the primary board.

The word *all*, meaning every module, can also be specified.

Parameters *(continued)*

For SAMs only, a number having the format *<module>*. Where: *module* is the node slot number of the trunk module that provides connectivity to the SAM. If the trunk module is a SAMML, the appropriate SAMML port number is appended to the address, separated by a period: *<module.port>*. When a single SAMML module address is specified, data for only the SAMML overhead channels is displayed. These channels, numbered 1 to 4, are used for maintenance and signaling. If the SAMML port number is appended, data for the backplane channels on the entire SAM is displayed. If *all* is specified, data for both overhead and backplane channels is displayed; that is: first SAMML data is displayed, followed by data for each SAM connected to the SAMML.

TYPE

Specifies whether connection information is to be displayed for a *module*, *group*, or *host*.

```
CC0> display
OBJECTS [...connections...]: connections
TYPE [module, group, host: +(group)]: module
MODULE ADDRESS [module number, all: +(all)]: 12
<report output>
```

SCREEN 3-38. Prompted Entry: Displaying Module Connections

```
CC0> display
OBJECTS [...connections...]: connections
TYPE [module, group, host: +(group)]: +
GROUP NAME [group name, all: +(all)]: tygrp012
<report output>
```

SCREEN 3-39. Prompted Entry: Displaying Group Connections

```
CC0> display
OBJECTS [...connections...]: connections
TYPE [module, group, host: +(group)]: host
HOST NAME [host name, all: +(all)]: cpm01
<report output>
```

SCREEN 3-40. Prompted Entry: Displaying Host Connections

```

CC0> display connections module 33
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M display connections module 33
MODULE: 33
-----
      CH/PT  CU/TM  GROUP    STATE    TO MOD    CH/PT  CU/TM  GROUP
            BOARD    (+ = PDD,    BOARD
            CS/LCH    or PVC,      CS/LCH
            PT/LCH    # = RRC)     PT/LCH
            PT/DLCI   PT/DLCI
1          E  ****    SIMUPST
4          E  ****    ACTIVE
5          E  ****    ACTIVE
6          E  ****    ACTIVE
7          E  ****    TALKING    33    7          I  ****
8/1        E  ****    ACTIVE
1          I  ****    SIMUPST
4          I  ****    ACTIVE
7          I  ****    TALKING    33    7          E  ****
8/1        I  ****    ACTIVE
CC0>

```

SCREEN 3-41. Prompted Entry: Displaying Two-Board Downloadable Module Connections

```

CC0> display connections module 12
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M display connections module 12
MODULE: 12
-----
      CH/PT  CU/TM  GROUP    STATE    TO MOD    CH/PT  CU/TM  GROUP
            BOARD    (+ = PDD,    BOARD
            CS/LCH    or PVC,      CS/LCH
            PT/LCH    # = RRC)     PT/LCH
            PT/DLCI   PT/DLCI
5          tygrp012 TALKING    4          9          1/2    trkgrp04
10         tygrp012 TALKING    4          10         1/3    trkgrp04
CC0>

```

SCREEN 3-42. One-line Entry/Output: Displaying BNS-2000 Module Connections

```

CC0> display connections group tygrp012
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M display connections group tygrp012
GROUP: tygrp012
-----
FM MOD      CH/PT  CU/TM  STATE  TO MOD      CH/PT  CU/TM  GROUP
          BOARD (+ = PDD,
          CS/LCH or PVC,
          PT/LCH # = RRC)
          PT/DLCI
12         5          REROUTE  4         9         1/2
          TALKING  6         261        3/2   trkgrp04
12        10          REROUTE  4         10        1/3
          TALKING  6         262        3/3   trkgrp04
CC0>

```

SCREEN 3-43. One-line Entry/Output: Displaying BNS-2000 Group Connections

```

CC0> display connections host cpmo1
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M display connections host cpmo1
HOST: cpmo1
-----
FM MOD      CH/PT  CU/TM  STATE  TO MOD      CH/PT  CU/TM  GROUP
          BOARD (+ = PDD,
          CS/LCH or PVC,
          PT/LCH # = RRC)
          PT/DLCI
22         6         1/7  TALKORG  8         5/1          tyr1
CC0>

```

SCREEN 3-44. One-line Entry/Output: Displaying BNS-2000 Host Connections

```

CC0> display connections module 8
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  display connections module 8
MODULE:      8
-----
  CH/PT CU/TM GROUP      PKT CNT  STATE      TO MOD  CH/PT CU/TM GROUP      PKT CNT
    BOARD                                     BOARD
    CS/LCH                                     CS/LCH
    PT/LCH                                     PT/LCH
    PT/DLCI                                    PT/DLCI
  3      *****      9350  ACTIVE
  4      *****      282364 ACTIVE
  5      *****      10227  ACTIVE
  8      1/1 *****      4946  BACKED
                                     4      512      5/1 *****      4950
134      2/1 *****      4966  BACKED
                                     4      638      6/1 *****      4969
260      3/1 *****      4956  BACKED
                                     4      764      7/1 *****      4962
386      4/1 *****      4921  BACKED
                                     4      890      8/1 *****      4924
512      5/1 *****      5009  BACKED
                                     4      1016     9/1 *****      5013
638      6/1 *****      4914  BACKED
                                     4      1142     10/1 *****      4917

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  display connections module 8
MODULE:      8
-----
  CH/PT CU/TM GROUP      PKT CNT  STATE      TO MOD  CH/PT CU/TM GROUP      PKT CNT
    BOARD                                     BOARD
    CS/LCH                                     CS/LCH
    PT/LCH                                     PT/LCH
    PT/DLCI                                    PT/DLCI
  764      7/1 *****      4909  BACKED
                                     4      1268     11/1 *****      4912
  890      8/1 *****      4908  BACKED
                                     4      1394     12/1 *****      4911
1016      9/1 *****      4907  BACKED
                                     4      1520     13/1 *****      4910
1142     10/1 *****      4907  BACKED
                                     4      1646     14/1 *****      4910
1268     11/1 *****      4910  BACKED
                                     4      1772     15/1 *****      4913
1394     12/1 *****      4868  DEAD
1441     13/1 *****      4869  DEAD
CC0>

```

SCREEN 3-45. One-line Entry/Output: Displaying BNS-2000 VCS Module Connections (with Session Maintenance Administered)

```

CC0> display connections module 24
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  display connections module 24
MODULE:      24
-----
CH/PT CU/TM GROUP      PKT CNT  STATE      TO MOD  CH/PT CU/TM GROUP      PKT CNT
      BOARD              (+ = PDD,      BOARD
      CS/LCH              or PVC,      CS/LCH
      PT/LCH              # = RRC)     PT/LCH
      PT/DLCI            PT/DLCI
      4          *****      124  ACTIVE
      1          *****      199  SIMUPST
      6  1/1001 frmpvc1      369 +TALKORG  25      162  3/1001 frmr1      736
      123  2/945 frmr2      333 TALKREC   25      501  4/55  frmpvc2     1234
CC0>

```

SCREEN 3-46. One-line Entry/Output: Displaying BNS-2000 VCS FRM Connections

Report Fields

CH/PT

The backplane channel number for which connection information is displayed or a physical port number.

CS/LCH

For a session maintenance trunk, the channel set number associated with the trunk and the logical channel (LCH) number relative to the channel set.

CU/TM BOARD

A board or control unit (CU) number, a port number, or a data link connection identifier (DLCI) for which data is displayed.

FM MOD

If **TYPE** is *group* or *host*, the module address from which the connection has originated.

GROUP

The group name for which connection information is displayed.

HOST

The host name for which connection information is displayed.

MODULE

If **TYPE** is *module*, the module address of the destination port as shown on the right side of the report. If **TYPE** is *group* or *host*, the module addresses for which connection information is displayed. For the originating port, the address is on the left side of the report; for the destination port, the address is on the right side of the report.

PKT CNT

The number of packets generated by the specific module and channel.

PT/DLCI

The port number and the data link connection identifier (DLCI) relative to the port.

PT/LCH

A port number and logical channel (LCH) number relative to the port.

STATE (+ = PDD, or PVC, # = RRC)

The call state of each channel. A **+** indicates a channel with a predefined destination (PDD) or a permanent virtual circuit (PVC), and a **#** indicates a rerouted call (RRC). Possible call states are:

ACTIVE	The common supervisory channel can accept or originate calls. For an active channel set on a session maintenance trunk, the normal state.
ALIVE	For a console or host, the state in which it can receive a call. For a terminal, the state in which it can originate a call. For a bridge channel belonging to a receiving group, the state in which it is waiting for an incoming call request; otherwise it is the state in which it is about to originate a call.

Report Fields *(continued)*

ATTN	The Control Computer is generating an attention session for this channel.
AUTO_W	A transient state in which a call with a PDD is failing or waiting to retry.
BABBLE	Too many invalid destinations; the port (endpoint) is dead.
BACKED	For an active channel set on a session maintenance trunk, all calls associated with a channel set were rerouted.
BAD_STE	An invalid/unexpected/unknown state.
BOOTING	A downloading state in which the Control Computer has just been rebooted or the module is requesting service. The downloading maintenance process polls the board to determine if it contains valid software. If it does not, the RESTORING state is entered and the module is redownloaded. If the module requests a download, the DOWNLOADING state is entered directly.
BREAK	For endpoints with a terminal user interface, the terminal (command mode) broke its connection and is talking to the Control Computer.
CONFGDL	For downloadable modules, a maintenance channel state in which configuration information is being downloaded to the module.
CONNECT	For a trunk, a call is in progress for that channel.
CONTROL	The channel is in a control session with the Control Computer. Similar to BREAK .
DEAD	The remote device is not responding or an excessive number of consecutive signals (babbling) is detected. Remove and restore the module/port. If the problem persists, check for a hardware malfunction. For an active channel set on a session maintenance trunk, any associated calls that were dropped because the Control Computer could not find a backup trunk; or any channel set that did not initialize.
DEADEQ	Module software indicated that the trunk is not healthy yet.
DEADTRK	Transition from DEADEQ to ACTIVE ; the Control Computer presumes that the trunk is not healthy.
DIAG	Diagnostics are being run on the module or port.
DIALING	For a terminal, the terminal user is dialing a number and is waiting for the call to be answered. For a dialer, the Control Computer is waiting for the modem to dial the number.
D_TALK	For endpoints with a prompted interface or for PDDs that can receive calls, the endpoint is involved in the origination of a call.

Report Fields *(continued)*

DWNLD	Software is being downloaded to the module.
ENDING	The Control Computer is waiting for the remote device to drop and reassert DTR to signal its willingness to accept another incoming call. This state has two substates: waiting for DTR to drop; waiting for DTR to be reasserted.
EP_INIT	The remote device is initializing or is not ready to participate in a call.
FIX	A terminal dialed a host and hung up before the host could respond to the request for service. Or, a module port has exceeded the threshold for 10 invalid destination requests. The port stays in this state until the device completes its power cycle. If this state occurs during initialization, any channel that is up must be taken down.
I_BUSY	A call survived after a reboot. The Control Computer waits in this state until the endpoint can participate in the call after the reboot.
I_DEAD	An inconsistent call (a call in which both ends are not pointing to one another) occurred after a reboot. Or, a call that appeared to be valid after the reboot hung. The Control Computer remains in this state until it has completed endpoint initialization procedures.
IDLE	The channel or port is inactive.
I_IDLE	The endpoint is idle after a reboot or during typical call processing conditions.
INCALL	Calls are being made to an endpoint.
INITEND/ INITING/ INITWAIT	Indicates initialization when the channel is first being set up.
I_TALK	An endpoint is participating in the receiving side of a call.
I_WAIT	The module is waiting to initialize.
LINKDL	A maintenance channel state in which link control information is being downloaded to the module.
LOOPBK	The module is still in loopback mode from running diagnostics.
OFFHOOK	The attached device is off hook.
ONHOOK	The attached device is on hook.
OUTCALL	The state used during call setup to handle calls originated by endpoints not having a prompted interface.

Report Fields *(continued)*

O_TALK	For endpoints not having a prompted interface or for PDDs that can receive calls, an endpoint is participating in the originating side of a call.
P_CNTRL	The channel is waiting for an acknowledgment to proceed to CONTROL .
P_DOWN	The channel is waiting for an acknowledgment to take down the call.
P_IDLE	The channel is waiting for an acknowledgment to proceed to IDLE .
P_TALK	The channel is waiting for an acknowledgment to proceed to TALKING .
PVC_SUP	The Control Computer is attempting to complete the PVC call.
READING	The channel is waiting for the server name from the host. For a dialer, the channel is trying to determine if the device exists.
REBOOT	A communication problem exists on the maintenance channel or a redownload has occurred. For a SAMML, a redownload has occurred.
RECEIVE	An endpoint that can receive a call.
REROUTE	For session maintenance configurations, the call on the original channel was rerouted. Reroutes occur because of manual administrator requests or automatic session maintenance.
RESTART	Indicates waiting for a download message (the server and version number) from the maintenance process.
RESTORE	The module is being restored to service and must download software.
RINGING	A terminal is calling a host that is not answering; the host channel is ringing and the terminal channel is waiting. Contrast with WAITING . For a dialer, the modem is ready to dial the number and is waiting for a response indicating call success or failure.
SERVING	For a port, this channel shows an active UNIX® server on the specified host.
SIMUPST	For downloadable modules, a maintenance channel state indicating that the module was restored to service and that any operations, administration, or maintenance commands can be sent to the module over the maintenance channel. If the module is restored to service and the download is put in the background, the state of the maintenance channel changes several times until it reaches the SIMUPST state.
SIREQ	The port is re-initializing universal receiver protocol (URP).
SPLICE	A call splice (call transfer) is in progress.

Report Fields *(continued)*

SUSPEND	For downloadable modules, a maintenance channel state in which the maintenance process completed all services requested and is suspended in the idle state. For trunks or trunk channels, a call on hold.
TALKING	A call is in progress.
TALKOPD	This field is not used.
TALKORG	An originating channel has a call in progress.
TALKREC	A receiving channel has a call in progress.
TFADE	A trunk fade has occurred.
UNKNOWN	A port was removed from service.
UPLOAD	The module is uploading text or data.
WAITACK	The trunk call process is waiting for an acknowledgment from the Trunk-PQ module for configuring or clearing CIR.
WASDIAL	A valid dialing state for all non-PDD originating ports. For ports not configured for autobaud, the state users enter after specifying a dial string from a destination port and getting timed-out by the Control Computer. For ports configured for autobaud, the state entered when the Control Computer is waiting for user input to determine the appropriate baud rate of the port.
W_ACK	The trunk channel is waiting for the remote node to acknowledge whether call setup was successful. The remote node might not acknowledge because of a time out, it might have failed, or a collision might have occurred.
W_ADAIL	A channel is waiting for an acknowledgment from a dial signal.
W_ADRPR	The terminal is waiting to go into originate mode after timing out at the destination prompt.
W_ATALK	A channel is waiting for an acknowledgment to go to TALKING state.
W_CONN	A transitional state of waiting to connect or that time between dialing and connecting.
W_DNWLD	The maintenance process is waiting for the module to notify that it is ready to download.
W_DSTRG	The trunk channel told the remote node that it is waiting to receive the dial string.
W_ING	The dial string was collected, the call was forwarded to its destination, and the originator is waiting for an answer.

Report Fields *(continued)*

W_INIT	Modules are waiting to begin keep-alive polling.
W_LACK1	The trunk channel is waiting for the first acknowledgment from the destination in order to establish a switch connection.
W_LACK2	The trunk channel is waiting for the second acknowledgment from the destination to accept (acknowledge) the call.
W_NET	For a bridge channel, indicates waiting for a network failure to clear.
W_NET1	This field is not used.
W_NET2	This field is not used.
W_NUM	The host initiated a call, was unsuccessful, and is waiting to be torn down. The handshaking sequence over the common signaling channel must be completed first.
W_O	The trunk channel is trying to call an endpoint. It has sent a call request to the remote node and is waiting for it to acknowledge its readiness to accept the dial string.
W_ONHK	The bridge channel starting initializing and is waiting for an on hook from the endpoint to indicate its availability.
W_OPTS	The bridge channel has downloaded options to the endpoint and is waiting for the endpoint to send an acknowledgment.
W_RESET	A port is not in service; the module is waiting for the port to be restored so it can be reset.

TO MOD

If **TYPE** is *group* or *host*, the module address of the module that is the destination of the connection.

dmeas connections

The **dmeas connections** command enables you to display measurements reports for connections established through the node. These reports are organized by receiving or two-way groups (that receive calls) and trunk groups. They contain data accumulated since the last scheduled report was printed, giving a breakdown of connection failures and, optionally, of security failures. The *low* detail version of the report summarizes the measurements; the *high* detail version summarizes the measurements and provides a breakdown of each type of security failure.

The **dmeas connections** command is nondestructive and does not have any effect on the next report that is printed. Its companion command, **schedule measurements <connections>**, allows periodic measurements reports to be scheduled.

Syntax

You can input **dmeas connections** in prompted or one-line entry.

```
CC0> dmeas
OBJECTS [...connections...]: connections
DETAIL [high, low: +(low)]:
```

Parameters

DETAIL

Specifies if the output is to contain a limited amount of information (*low* detail) or more information (*high* detail).

```
CC0> dmeas
OBJECTS [...connections...]: connections
DETAIL [high, low: +(low)]: +
<report output>
```

SCREEN 3-47. Prompted Entry: Displaying Low Detail Connection Measurements

```
CC0> dmeas
OBJECTS [...connections...]: connections
DETAIL [high, low: +(low)]: high
<report output>
```

SCREEN 3-48. Prompted Entry: Displaying High Detail Connection Measurements

```

CC0> dmeas connections +
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  CONNECTION MEASUREMENTS                               <yy-mm-dd> <hh:mm> ----> <yy-mm-dd> <hh:mm>

      TOTAL OF HELD CALLS:    1    PEAK HELD CALLS:    1

GROUP      PEAK CONN    ATT    FAILURES    CONTENTION    SECURITY    OTHER
emulator    2( 20%)     0      0( 0%)      0( 0%)      0( 0%)      0( 0%)
hs29_4       6( 12%)     0      0( 0%)      0( 0%)      0( 0%)      0( 0%)
ibmhost      6( 30%)     4      0( 0%)      0( 0%)      0( 0%)      0( 0%)
janet        1( 0%)      1      0( 0%)      0( 0%)      0( 0%)      0( 0%)
scallop      10( 16%)    64      0( 0%)      0( 0%)      0( 0%)      0( 0%)
sft27_9      2( 6%)      0      0( 0%)      0( 0%)      0( 0%)      0( 0%)
shrimpg     10( 33%)    65      0( 0%)      0( 0%)      0( 0%)      0( 0%)
sissy        1( 3%)     15     14( 93%)    0( 0%)      0( 0%)     14( 93%)
-----
NODE:       36          149    14( 9%)      0( 0%)      0( 0%)     14( 9%)
CC0>

```

SCREEN 3-49. One-line Entry/Output: Displaying Low Detail Connection Measurements

```

CC0> dmeas connections high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  CONNECTION MEASUREMENTS                               <yy-mm-dd> <hh:mm> ----> <yy-mm-dd> <hh:mm>

      TOTAL OF HELD CALLS:    1    PEAK HELD CALLS:    1

GROUP      PEAK CONN    ATT    FAILURES    CONTENTION    SECURITY    OTHER
emulator    2( 20%)     0      0( 0%)      0( 0%)      0( 0%)      0( 0%)
hs29_4       6( 12%)     0      0( 0%)      0( 0%)      0( 0%)      0( 0%)
ibmhost      6( 30%)     4      0( 0%)      0( 0%)      0( 0%)      0( 0%)
janet        1( 0%)      1      0( 0%)      0( 0%)      0( 0%)      0( 0%)
scallop      10( 16%)    65      0( 0%)      0( 0%)      0( 0%)      0( 0%)
sft27_9      2( 6%)      0      0( 0%)      0( 0%)      0( 0%)      0( 0%)
shrimpg     10( 33%)    65      0( 0%)      0( 0%)      0( 0%)      0( 0%)
sissy        1( 3%)     15     14( 93%)    0( 0%)      0( 0%)     14( 93%)
-----
NODE:       36          150    14( 9%)      0( 0%)      0( 0%)     14( 9%)

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  CONNECTION MEASUREMENTS                               <yy-mm-dd> <hh:mm> ----> <yy-mm-dd> <hh:mm>

      <----- SECURITY ANALYSIS ----->
GROUP      ORIG GRP      CUG      CALL SCR      CHK TRAF AGR
no security failures
CC0>

```

SCREEN 3-50. One-line Entry/Output: Displaying High Detail Connections Measurements

Report Fields

ATT

The number of attempts to create a connection to the specified group during the last report interval. The report interval is not reset unless measurements were scheduled using **schedule measurements <connections>**. For trunk groups, this count shows the number of call attempts from the remote node and/or from the other originating, two-way, and/or trunk groups to establish a connection to this group. For receiving and/or two-way groups, this count shows the number of call attempts from other originating, two-way, and/or trunk groups to establish a connection to this group.

CALL SCR

The number and percentage of call screening security failures which are a subset of the total security failures for the group. The percentage is the ratio of call screening failures to call attempts.

To determine the call screening profile that could have been involved in the call failure, use **verify group <module>** to display the trunk modules associated with the particular group and use **verify profile <call_screening>** to display each call screening profile.

CONTENTION

The number of call-setup attempts that failed because free ports to the destination were not available. Contention failures in a virtual control switch network are similar to "busy signals" in the switched telephone network.

CUG

The number and percentage of closed user group (CUG) security failures, which is a subset of the total security failures for the group. The percentage is the ratio of CUG security failures to call attempts.

To determine the CUG group profile that could have been involved in the call failure, use **verify group <both>** to display the addresses and modules associated with the particular group; use **verify address** and **verify module** to display the CUG group profile ID associated with each address and module, respectively; and use **verify profile <cug>** to display the CUG profile IDs.

FAILURES

The total number of connection attempt failures. The percentage is the ratio of failures to attempts. Types of failures include **CONTENTION**, **SECURITY**, and **OTHER**.

GROUP

The name of the group (receiving, two-way, or trunk) for which the report is generated.

NODE

Indicates node activity; that is, the sum of all the reported groups for the **ATT**, **FAILURES**, **CONTENTION**, **SECURITY**, and **OTHER** fields. Under the **PEAK CONN** field, the instantaneous peak number of connections in the node, which is not necessarily the sum of the peak connections of all reported groups.

Report Fields *(continued)***ORIG GRP**

The number and percentage of originating group security failures, which is a subset of the total security failures for the group. The percentage is the ratio of originating group security failures to call attempts.

To determine the originating group security pattern that could have been involved in the call failure, use **verify group** <addresses> to display the addresses associated with the particular group and **verify address** to display the originating group security pattern associated with each address.

OTHER

The number and percentage of miscellaneous call failures. The percentage shown is the ratio of other failures to attempts. Some miscellaneous failures include: the destination address is not answering (module/port is out of service or server is not answering); the trunk is inoperable (the common signaling channel is dead; the trunk lost communication with the remote node; the trunk is out of service); the hop count was exceeded; or network routing errors, service type mismatches, Control Computer overload, or subscriber errors exist.

PEAK CONN

The peak connections of the group for the report interval. The maximum number of connections that existed at any point during the report interval is shown. The percentage is the maximum number of connections divided by the total number of channels associated with the in-service ports.

PEAK HELD CALLS

The number of peak held calls for the node during the report interval. This number is the maximum number of calls that were in the **ACTIVE** , **HELD** , or **DISCON** state at any time during the shown report interval.

SECURITY

The number and percentage of security failures; or the number of call attempts that failed because of originating and CUG security and trunk call screening. The percentage is the ratio of security failures to call attempts.

SECURITY ANALYSIS

A breakdown of the measurements accumulated for security failures. Failures for the originating group (**ORIG GRP**) , closed user group (**CUG**) , and call screening security (**CALL SCR**) are included for the report interval.

TOTAL OF HELD CALLS

The total held calls for the node. (Those calls in the **ACTIVE** and **HELD** states when the report was requested.) For a breakdown of space allocated for held calls, use **display held** <all>.

System Responses

This section contains system responses for **connections** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

No measurements report displayed.

The command failed to generate the measurements report. Retry the command later. If the same response recurs, contact your support group.

Internal Database Error: (dispconn, <internal info>)

Contact your support group.

INFO:

No connection data for <module <addr>/channel set <num>>; session maintenance reroute in progress.

Connection data was requested for a module or channel set that is undergoing a reroute or is negotiating to revert to its original route.

Use 'display connections module <mod.port>' for a complete SAM report.

If SAM is SAMML-connected, use the indicated format for a complete report.

INPUT ERROR:

A port number may not be appended to this module's address.

The extended addressing scheme was used for a non-SAMML module.

Cannot display connection data for a specific channel set in a session maintenance trunk.

If a specific channel set is input on the command line, connection data is not displayed.

Cannot display connections for second board of two-board module.

Connection information can only be provided for the first board of a two-board module.

Concentrator Does Not Exist: <addr>

Information has not been administered for the specified concentrator.

Group Does Not Exist: <name>

Information has not been administered for the specified group.

Host Does Not Exist: <name>

Information has not been administered for the specified host.

Input String too Long: <string>

The specified parameter contained too many characters. When you are reprompted for this parameter, enter the correct number of characters.

Invalid Concentrator Address: <addr>

Concentrator number entered exceeds allowable limit. Enter a valid address and retry the command.

INPUT ERROR: *(continued)***Invalid Hardware type: Common Equipment**

Connection information cannot be displayed for common node equipment.

Invalid module address.

The module address specified is not valid for the attempted operation. Enter the correct module address and retry the command.

Invalid Number: <num>

An invalid number was input (for example, -1).

Module Does Not Exist: <addr>

Information has not been administered for the specified module.

No Default Allowed:

The parameter does not have a default.

Not an allowed value: <value>

The value input is prohibited.

Parameter out of Range: <range>

The parameter input is prohibited.

Slot is reserved: <addr>

The specified module address is reserved and cannot be used for this type of module.

The dual trunk SAM must be addressed by its primary port number.

The SAMDL is a dual link to a SAMML-connected SAM: one link, designated as the primary, is connected to an odd-numbered port on a SAMML. The other, designated the secondary link, is connected to a consecutive, even-numbered port on a SAMML. To address any port on a SAMDL, its primary port on the SAMML must be specified.

NO KEY PHRASE:**Command manually terminated.**

The key was pressed at the system console before the report was generated.

NO CHLS IN SERVICE

The command processor could not find any in-service channels for the specified module. Retry the command. If the message reappears, use **verify module** for a detailed display of the module status.

NO CHLS IN USE FOR GROUP

The command processor could not find any in-service channels for the specified group. Retry the command. If the message reappears, use **verify group** for a detailed display of the group status. (You can execute **display connections** regardless of the service state of channels. However, detailed information is only displayed if channels are in service.)

NO MODULES IN DATABASE

The command processor could not find the module entries in the database. Retry the command. If the message reappears, use **verify module** for a detailed display of the module status.

NO KEY PHRASE: *(continued)*

NO SWITCH MEMORY <MOD/PORT> <addr>

The command processor could not access switch memory to retrieve module/port packet count information. Retry the command. If the message reappears, use **dstat** for a detailed display of the module/port status.

Not an allowed value.

The value input is prohibited. Enter a correct value and retry the command.

NOT UNIQUE ENOUGH

The abbreviation input is too brief to be unique. (For example: *c* for connections is too brief; at least *conn* is required.)

OUTPUT MANUALLY TERMINATED

The command exited without completing because was pressed.

Parameter Out of Range: <num>

A module number such as 0 or a number greater than the maximum allowed slot number.

Requested measurement report timed out.

Problems occurred while generating the requested report. Retry the command. If the same response recurs, contact your support group.

Scheduled report is being processed. Try again after it is generated.

Scheduled measurements reports are currently being processed. Retry the command later.

Switch memory access failed = <num>

The command processor could not access switch memory to retrieve the packet count for the port. Retry the command. If the message reappears, use **dstat** for a detailed display of the module port status and report the error number to the Customer Assistance Center (CAC).

Unrecognized arg type.

Only modules, groups, or hosts can be input. Input the type for which information is to be displayed and retry command.

cpackets and mpackets command set

The following commands are related to the **cpackets** and **mpackets** command set.

Verb/Object	Related Verbs	Related Object
dmeas cpackets	dstat	module
set cpackets	verify	
dmeas mpackets	dstat	module
	verify	

dmeas cpackets

The **dmeas cpackets** command enables you to display measurements reports for the number of packets the Control Computer receives from a specified list of channels. The channels for which information is displayed were previously specified with **set cpackets**.

The measurements shown, which are useful when tracking babbling ports, were accumulated since the list of channels was specified with **set cpackets**. Each time the Control Computer receives a packet from a specified channel (known as a *channel packet*) it increments a count for that channel. Once a connection bus has been established, the count excludes data packets because they bypass the Control Computer. If a count is greater than 999,999 or the counter has overflowed its buffer, an asterisk is printed in each space available for the count field. The command displays up to 32 counts, one for each module/port pair designated.

Syntax

You can input **dmeas cpackets** in prompted or one-line entry.

```
CC0> dmeas
OBJECTS [...cpackets...]: cpackets
```

Parameters

None.

```
CC0> dmeas
OBJECTS [...cpackets...]: cpackets
<report output>
```

SCREEN 3-51. Prompted Entry: Displaying cpacket Measurements

```
CC0> dmeas cpackets
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dmeas cpackets
MOD ADDR      CHAN      CONTROLLER-PACKET-COUNT
      9        5          9
      8        6          0
CC0>
```

SCREEN 3-52. One-line Entry/Output: Displaying Cpacket Measurements

```
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dmeas cpackets
NO ACTIVE COUNTS      (Use 'set cpackets' to activate)
CC0>
```

SCREEN 3-53. Output: Displaying cpacket Measurements without Setting cpackets**Report Fields****CHAN**

The channel number for which packet counts have been reported.

CONTROLLER-PACKET-COUNT

The number of packets the Control Computer has received from the specified channel.

MOD ADDR

The set of numbers identifying the address of the module. If the module is installed directly in the node, the address is <module>. Where: *module* is the node slot number that the module occupies.

If the module is installed in a concentrator, the address is <concentrator/module>. Where: *concentrator* is the node slot number that the link interface module (LIM), which connects the concentrator to the module, occupies; and *module* is the concentrator slot number of the module.

set cpackets

The **set cpackets** command furnishes the capability of counting the number of channel packets the port sends to the Control Computer. These counts are used to track babbling ports on modules, which can then be examined using **dmeas cpackets**. The Control Computer counts packets it receives from its interface module. Once a call is established, packets transmitted across the data channel are not counted because they are not sent to the Control Computer. Also, the Control Computer does not count status packets using this method; meaning, channel 0 should never be specified. If a status packet count is needed, use the **dstat** command.

Any combination of up to 32 channels can be specified for counting. Each time **set cpackets** is executed, the current list of channels being counted (if any) is cleared and the newly specified channels are entered.

Syntax

You can input **set cpackets** in prompted entry only.

```
CC0> set
OBJECTS [...cpackets...]: cpackets
CONTROL [on, off: +(off)]:
MODULE ADDRESS:
CHANNEL NUMBER:
```

If CONTROL is "on", command loops to MODULE ADDRESS prompt.

Parameters

This section contains explanations of parameters used in the **set cpackets** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CHANNEL NUMBER

Specifies the number of the channel for which packet counting is to be enabled. Multiple channel numbers are allowed.

CONTROL

Specifies if the number of packets sent to the Control Computer should (*on*) or should not (*off*) be counted for the specified channel.

MODULE ADDRESS

A single set of numbers identifying the address of the module for which the packet count feature is to be enabled; where: *module* is the node slot number that the module occupies.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the LIM, which connects the concentrator to the module, occupies; and *module* is the concentrator slot number the module occupies in the concentrator.

```
CC0> set
OBJECTS [...cpackets...]: cpackets
CONTROL [on, off: +(off)]: on
MODULE ADDRESS: 5
CHANNEL NUMBER: 5
MODULE ADDRESS: 
CC0>
```

SCREEN 3-54. Prompted Entry: Setting the cpackets Control Feature

dmeas mpackets

The **dmeas mpackets** command enables you to display a count of packets the Control Computer receives from each module residing in the node. Each time the Control Computer receives a packet from any module channel, it increments a count for that module.

Since the counts are cleared when the system is rebooted or when the module is removed from service, the counts indicate the number of packets received from that time. Status packets coming from the module are not included in the count.

NOTE: Once a connection has been established, the count excludes data packets because they bypass the Control Computer. If the count exceeds 524,287, it reverts to zero and begins again.

The information displayed is useful to track babbling ports on modules. After you determine that a particular module has a port that is babbling, use **set cpackets** and **dmeas cpackets** to determine the exact channel that is babbling.

Syntax

You can input **dmeas mpackets** in prompted or one-line entry.

```
CC0> dmeas
OBJECTS [...mpackets...]: mpackets
```

Parameters

None.

```
CC0> dmeas
OBJECTS [...mpackets...]: mpackets
<report output>
```

SCREEN 3-55. Prompted Entry: Displaying Module Packet Measurements

```

CC0> dmeas mpackets
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dmeas mpackets
MOD ADDR:  +0      +1      +2      +3      +4      +5      +6      +7
          0:      0      0      11      56      100     90      191     22
          8:      85     73      0      0      0      0      0      0
         16:      25     15     20      5      9      1      19     60
         24:      0      4     10     92     887     10      8      0
         32:      0      0      0      0      0      0      0      0
         40:      0      0      0      0      0      0      0      0
         48:      0      0      0      0      0      0      0      0
         56:      0      0      0      0      0      0      0      0
         64:      0      0      0      0      0      0      0      0
         72:      0      0      0      0      0      0      0      0
         80:      0      0      0      0      0      0      0      0
         88:      0      0      0      0      0      0      0      0
         96:      0      0      0      0      0      0      0      0
        104:      0      0      0      0      0      0      0      0
        112:      0      0      0      0      0      0      0      0
        120:      0      0      0      9097    76      0      989    230
SLOT NO.:   1 (9)   2 (10)  3 (11)  4 (12)  5 (13)  6 (14)  7 (15)  8 (16)
MOD ADDR:
          45:      0      0      0      0      0      0      0      0
          0:      0      0      0      0      0      0      0      0
         122:      0      0      0      0      0      0      0      0
CC0>

```

SCREEN 3-56. One-line Entry/Output: Displaying Module Packet Measurements

Report Fields

MOD ADDR

The address of each concentrator or module for which packet information is received from the module.

System Responses

Other than command output, **dmeas cpackets** and **dmeas mpackets** do not have any associated system responses.

This section contains system responses for **set cpackets**. It is organized by the key phrase that prefaces the response.

INPUT ERROR:

<mod add.chan> Not In Service

The module address and channel specified is not in service or the port number is invalid.

Module Does Not Exist: <addr>

The module address entered is invalid, reserved, or is one in which a module is not configured. Retry the command.

No Default Allowed: +

A plus sign or was entered at the prompt. The system recognizes both inputs as prohibited defaults for the parameter.

Not an Allowed Value: <input>

Something other than *on* or *off* was entered at the **CONTROL** prompt. Retry the command.

Number Expected: <input>

Something other than a number was entered at the **MODULE ADDRESS** prompt. Retry the command.

dkap command set

The following commands are related to the **dkap** command set.

Administration	Operation	Maintenance	Related Objects
change dkap delete dkap enter dkap verify dkap	remove dkap restore dkap	diagnose dkap dmeas dkap dstat dkap	address group* measurements module oosmods schedule

* This object should be entered before configuring a DKAP in the database.

change dkap

The **change dkap** command enables you to modify information regarding a DKAP module or channel set in the database. If the DKAP module is removed from service, all parameter options can be changed in the database. If the DKAP module is not removed from service, only a subset of the parameter options can be changed in the database. Before any database changes can take effect, the module must first be removed and restored to service.

Syntax

You can input **change dkap** in prompted entry only. The command syntax for **enter dkap** and **change dkap** are similar. The defaults for **change dkap** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

Parameters

Refer to the parameter definitions supplied in **enter dkap**.

```
CC0> change
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: chnlset
MODULE ADDRESS: 5
CHANNEL SET ID [1-63]: 3
0 channels left to be specified.
NUMBER OF CHANNELS PER CHANNEL SET [1-507: +(100)]: +
SERVICE TYPE [host, terminal, 2way: +(terminal)]: +
GROUP [up to 8 chars: +(dkapo)]: +
PREDEFINED DESTINATION ["none" to delete: +(none)]: dkaphome
CHANNEL SET ID [1-63]: 
CC0>
```

SCREEN 3-57. Prompted Entry: Changing DKAP Channel Set Information

delete dkap

The **delete dkap** command enables you to eliminate information in the database regarding a DKAP module or channel set. Before any information can be deleted, the particular channel set or module must be taken out of service with **remove dkap**. In addition, attached components that lie below the specified component in the hierarchy must be deleted first. This means that before you can delete module information, you must first remove attached channel sets from service and then delete their database entries.

Syntax

You can input **delete dkap** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]:
MODULE ADDRESS:
```

For a channel set:

```
CHANNEL SET ID [1-63]:
```

Parameters

Refer to the parameter definitions supplied in **enter dkap**.

```
CC0> delete
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: chnlset
MODULE ADDRESS: 5
CHANNEL SET ID [1-63]: 3
CC0>
```

SCREEN 3-58. Prompted Entry: Deleting DKAP Channel Set Information

```
CC0> delete
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: module
MODULE ADDRESS: 5
CC0>
```

SCREEN 3-59. Prompted Entry: Deleting DKAP Module Information

```
CC0> delete dkap chnlset 5 3
CC0> delete dkap module 5
```

SCREEN 3-60. One-line Entries: Deleting DKAP Component Information

diagnose dkap

The **diagnose dkap** command enables you to initiate off-line or on-line diagnostic tests for a DKAP module. When running off-line diagnostics, the DKAP module must be removed from service; when running on-line diagnostics, the DKAP module must be in service.

Syntax

You can input **diagnose dkap** in prompted or one-line entry. If you respond *yes* to the **CONTINUE TESTING** prompt, the command loops until you press .

```
CC0> diagnose
OBJECTS [...dkap...]: dkap
DIAGNOSTIC TYPE [on-line, off-line]:
MODULE ADDRESS:
...
CONTINUE TESTING [yes, no: +(yes)]:
```

Parameters

DIAGNOSTIC TYPE

Specifies if the type of diagnostic to be run is *off-line* or *on-line*.

CONTINUE TESTING

Specifies whether (*yes* or *no*) diagnostic testing should be continued.

For the remaining parameters, refer to the definition supplied in **enter dkap**.

```
CC0> diagnose
OBJECTS [...dkap...]: dkap
DIAGNOSTIC TYPE [on-line, off-line]: on-line
MODULE ADDRESS: 5
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M diagnose dkap on-line 5
    Diagnose completed - test passed.
CONTINUE TESTING [yes, no: +(yes)]: no
CC0>
```

SCREEN 3-61. Prompted Entry: Running On-line DKAP Module Diagnostics

```
CC0> diagnose
OBJECTS [...dkap...]: dkap
DIAGNOSTIC TYPE [on-line, off-line]: off-line
MODULE ADDRESS: 5
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  diagnose dkap off-line 5
    Boot tests in progress -
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M
    Offline diagnostic boot test: PASS
    Extended RAM test in progress - . . .
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M
    Offline diagnostic memory test: PASS
    Diagnostic download in progress - . . .
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M
    Offline diagnostic down-loaded test:
        Inst. set:  PASS
        Timer test: PASS
        Port 2:     PASS
    DIAGNOSTIC EXITS
CC0>
```

SCREEN 3-62. Prompted Entry: Running Off-line DKAP Module Diagnostics

dmeas dkap

The **dmeas dkap** command enables you to generate on-demand measurement reports for a DKAP component. The module report displays measurements pertaining to the module as a whole; the channel set report displays module measurements, plus measurements for the specified channel set.

Syntax

You can input **dmeas dkap** in prompted or one-line entry.

```
CC0> dmeas
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]:
MODULE ADDRESS:

If COMPONENT is "chnlset":
CHANNEL SET ID [1-63: +(1-63)]:
INTERVAL [current, previous: +(current)]:
```

Parameters

This section contains explanations of parameters used in the **dmeas dkap** prompting sequence that differ from those used in **enter dkap**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

INTERVAL

Specifies if the on-demand report is to be printed for the *current* or *previous* reporting interval. The current interval includes those measurements accumulated since the previous scheduled report was generated; or if a report was not scheduled, those measurements accumulated since the module was last reset. Conversely, the previous interval includes those measurements accumulated prior to the current interval.

```
CC0> dmeas
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: chnlset
MODULE ADDRESS: 5
CHANNEL SET ID [1-63: +(1-63)]: 3
INTERVAL [current, previous: +(current)]: +
<report output>
```

SCREEN 3-63. Prompted Entry: Displaying DKAP Channel Set Measurements

```
CC0> dmeas dkap chnlset 5 3 +
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dmeas dkap chnlset 5 3 current

MODULE ADDRESS: 5      <yy-mm-dd> <hh:mm>-----> <hh:mm>

PACKETS    PACKETS    HALF FULL    BUFFERS      MIN
FM NODE    TO NODE    FIFO INTRPTS NOT AVAIL    IDLE  IDLE
40246101   85216323   0           0           94%  93%

MODULE ADDRESS: 5  CHANNEL SET: 3

      <-----CALLS----->
BUFFERS    RECV      TRAN      REJ BY    REJ BY
NOT AVAIL  BYTES    BYTES    DATAKIT  DKAP      ACTIVE  AVERAGE  PEAK
0          0        0        0         0         0        0         0
CC0>
```

SCREEN 3-64. One-line Entry/Output: Displaying DKAP Channel Set Measurements

Report Fields

- ACCPTD**
The number of calls the channel set accepted.
- ACTIVE**
The number of active calls at the time of the report.
- AVERAGE**
The average number of simultaneous calls.
- BUFFERS NOT AVAIL**
The number of times the module or channel set requested a buffer and none was available.
- CHANNEL SET**
The number of the channel set for which measurements have been displayed.
- HALF FULL FIFO INTRPTS**
The number of half-full, first-in/first-out interrupts the module received during the interval.
- IDLE**
The average percentage of time the module was idle during the interval.
- MODULE ADDRESS**
The address of the module for which measurements have been displayed.
- MIN IDLE**
The minimum percentage of time the module was idle during its busiest five-minute interval.

Report Fields *(continued)*

PACKETS FM NODE

The number of URP packets (including status packets) received from the node.

PACKETS TO NODE

The number of URP packets (including status packets) transmitted to the node.

PEAK

The peak number of simultaneous calls recorded during the interval.

RECV BYTES

The total number of bytes the module received from the network for transmission to the channel set.

REJ BY DATAKIT

The number of outgoing calls rejected by the node for the channel set.

REJ BY DKAP

The number of incoming calls rejected by the application for the channel set.

TRAN BYTES

The total number of bytes transmitted from the channel set to the network.

dstat dkap

The **dstat dkap** command enables you to display hardware and software status information for a DKAP module and its channel sets. The hardware status is obtained through the automatic monitoring capabilities of the Control Computer. The software status is obtained from the module itself—from DKAP on-board software.

Syntax

You can input **dstat dkap** in prompted or one-line entry.

```
CC0> dstat
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset: +(module)]:
MODULE ADDRESS:

If COMPONENT is "chnlset":
CHANNEL SET ID [1-63: +(1-63):]:
DETAIL [low, high: (+low)]:
```

Parameters

This section contains explanations of parameters used in the **dstat dkap** prompting sequence that differ from those used in **enter dkap**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

DETAIL

Specifies if the output is to show a limited amount of information (*low*) detail or more information (*high*) detail.

```
CC0> dstat
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset: +(module)]: module
MODULE ADDRESS: 5
DETAIL [low, high: (+low)]: high
<report output>
```

SCREEN 3-65. Prompted Entry: Displaying High Detail DKAP Module Status

```

CC0> dstat
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset: +(module)]: chnlset
MODULE ADDRESS: 5
CHANNEL SET ID [1-63: +(1-63)]: 1-2
DETAIL [low, high: (+low)]: +
<report output>

```

SCREEN 3-66. Prompted Entry: Displaying Low Detail DKAP Channel Set Status

```

CC0> dstat dkap module 5 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat dkap module 5 high
***** MODULE 6 *****
MODULE TYPE      SERVICE STATE  HARDWARE ERROR COUNT  SERIAL NUMBER
dkap             in service    2                      134
LAST HARDWARE ALARM
Module was reset  <yy-mm-dd> <hh:mm:ss>
LAST SOFTWARE ALARM
none
ONLINE  ENABLED
yes     yes
----- HIGH DETAIL -----
MODULE  FIFO  FM NODE  FM NODE  SANITY
RESET   RESET  PARITY   OVERFLO ERROR
2       0      0        0        0
EXPECT  FULL   EMPTY    ACTUAL   ACTUAL   EXPECT  EXPECT
TYPE    PACKETS PACKETS  STAT1    STAT2    STAT1   STAT2
dkap    146    0        1        0        1       0
MEMORY  STACK   END       END       END       MEMORY  START  TOTAL
END     SPACE  BSS      DATA    TEXT     LEFT    BUFS   BUFMEM
0x1fc000 0x2000  0x350cc  0x20f7a  0x18876  0x1614b2 0x1b3a40 0x445c0
BILLREC SOFTWARE NUMBER  TIMEOUT TIMEOUT TRUNC  AVG RSP
DROPPED ALARMS  TRANS  MOD    SYNCM  TRANS  TIME (msec)
0       0      66     0      0      0      30
RANGE    BAD
ERRORS   PACKETS
0        0
CC0>

```

SCREEN 3-67. One-line Entry/Output: Displaying High Detail DKAP Module Status

Report Fields

References made to alarms refer to those alarms messages cited in the *Data Networking Products Messages Reference*.

ACTUAL STAT1

The actual value of the hardware status byte of the most currently received status packet for the given module. The actual and expected values of **STAT1** can sometimes differ.

ACTUAL STAT2

The actual value of the software status byte of the most currently received status packet for the given module. The actual and expected values of **STAT2** can sometimes differ.

ACTUAL SRVC STATE

The actual service state of the channel set.

AVAIL SRVC STATE

The availability of the channel set to make or accept calls.

AVG RSP TIME

The average response time derived by dividing the total module response time by the total number of module transactions.

Report Fields *(continued)*

BAD PACKETS

When displaying Switch status, the number of packets received with envelope parity errors that the module transmitted on wrong channel and the Switch detected. To determine if the module is defective, run diagnostics.

BILLREC DROPPED

The number of billing records dropped by the *syncmaint* process.

CHNLS AVAIL

The number of logical channels currently available for this channel set.

CHNLS DATA XFER

The number of logical channels in the data transfer state.

CHNLSET NO

The number of the channel set.

CHNLS SETUP

The number of logical channels in the call setup state.

EMPTY PACKETS

The number of empty status packets received by the node. Empty status packets might occur when a module is defective or is not physically present in the shelf slot. See **EMPTY SLOT** alarm.

ENABLED

Shows *yes* only if the module mode switch is in the ENABL (enabled) position. This status is determined by status packet data.

END BSS

The end of BSS on the module.

END DATA

The end of data on the module.

END TEXT

Indicates the end of text on the module.

EXPECT SRVC STATE

The expected service state of the channel set.

EXPECT STAT1

The expected value of the hardware status byte for the module.

EXPECT STAT2

The expected value of the software status byte for the module.

EXPECT TYPE

The expected hardware type in the shelf slot. For in-service modules, this field shows administrator supplied information. For out-of-service modules, this field shows status packet supplied information. See **WRONG MODULE TYPE** alarm.

Report Fields *(continued)***FIFO RESET**

Shows a count of FIFO synchronization problems (a hardware problem) on the module. See **FIFO RESET** alarm.

FM NODE OVERFLO

Shows any difference between the rate at which information arrives at a module and the rate at which the subscriber processes that information. (Overflow errors can occur during typical operation and do not necessarily indicate a problem. See **FROM BUS OVERFLOW** alarm.)

FM NODE PARITY

Indicates how many packets have gone to or come from the node with parity errors.

FULL PACKETS

The number of full status packets received which occurs when a module is physically present in the shelf slot.

HARDWARE ERROR COUNT

Shows an approximate sum of module errors detected since its last reboot. Counts of 3 or 4 can be typical for a given module; higher counts probably indicate some problem.

LAST HARDWARE ALARM

The last alarm for the given module, based on status packet data. This information is not stored between Control Computer reboots.

LAST SOFTWARE ALARM

The text, date, and time of the last alarm the module issued by and for itself. This information is not stored between module or Control Computer reboots.

MEMORY END

The end of memory on the interface module.

MEMORY LEFT

The amount of remaining memory for the module.

MODULE RESET

The number of module resets. For some modules, resets occur during normal operation. See **MODULE WAS RESET** alarm.

MODULE TYPE

Indicates, according to status packet information received, what type of module is actually present. It does not reflect the module type specified with **enter** and **delete**. This field is initialized to empty.

NUMBER TRANS

The number of transactions processed since the last reboot.

ONLINE

Shows a status of *yes* only if the green LED on the module is *on*. This status is determined by status packet information.

Report Fields *(continued)***RANGE ERRORS**

The number of packets transmitted by the module on a channel that is beyond the limit for which the module is configured. Range errors might be attributed to a defective module that is corrupting the address field of the segment or a channel configuration mismatch on both sides of the trunk module or CPM. To determine if the module is defective, run module diagnostics; to determine if a configuration mismatch has occurred, review the module configuration.

SANITY ERROR

See **Module malfunction** alarm in the *Data Networking Products Messages Reference*; for the SYNC8 or TSMs, use the **dstat** command.

SERIAL NUMBER

The factory-encoded unique number that appears on modules accessing the backplane (modules with a switch and LED). Maintaining records with these numbers helps track vintages of circuit packs.

SERVICE STATE

Shows if the current service state of the module is *in service* (via the **restore** command), *oos,manual* (out of service via the **remove** command), *oos,fault,auto* (out of service via the alarm system), or *rfs* (ready for service).

SOFTWARE ALARMS

The number of module alarms reported since the last reboot or restore.

STACK SPACE

The amount of stack space available on the module.

START BUFS

The start of buffer memory on the module.

TIMEOUT MOD

The number of transactions that timed-out at the module since the last reboot or restore.

TIMEOUT SYNCM

The number of transactions that were returned from the module, but were timed-out by the *syncmaint* process, since the last reboot.

TOTAL BUF MEM

The amount of buffer memory available on the interface module.

TRUNC TRANS

The number of truncated transactions since the last reboot.

enter dkap

The **enter dkap** command enables you to add DKAP module and channel set information into the database. Module information must be entered first, followed by channel set information. The module must be out of service when entering new channel sets.

Syntax

You can input **enter dkap** in prompted entry only. The sequence of prompts depends on your response to the **COMPONENT** prompt. The defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]:
MODULE ADDRESS:
```

If COMPONENT is "module":

```
COMMENT [up to 60 chars double quoted]:

HARDWARE CONFIGURATION TYPE [up to 8 chars]: dkap

DOWNLOAD SERVER [+(controller)]:
SOFTWARE VERSION [+(standard)]:

UPLOAD SERVER [+(none)]:
```

If UPLOAD SERVER is specified:

```
UPLOAD ALWAYS BEFORE DOWNLOAD [yes, no: +(no)]:
```

If UPLOAD SERVER is specified and UPLOAD ALWAYS BEFORE DOWNLOAD is "no":

```
UPLOAD ONLY AFTER FAULT [yes, no: +(no)]:

NUMBER OF USER CHANNELS [1-507: +(100)]:
```

Command loops to MODULE ADDRESS prompt.

If COMPONENT is "chnlset":

```
CHANNEL SET ID [1-63]:
<#> channels left to be specified.

NUMBER OF CHANNELS PER CHANNEL SET [1-507: +(100)]:

SERVICE TYPE [ host, terminal, 2way: +(terminal)]:
GROUP [up to 8 chars]:
```

If SERVICE TYPE is "terminal" or "two-way":

```
PREDEFINED DESTINATION [+(none)]:
```

Command loops to CHANNEL SET ID prompt.

enter dkap

Parameters

This section contains explanations of parameters used in the **enter dkap** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

COMPONENT

Specifies whether the hardware component to be entered is a *module* or a *chnlset*.

MODULE ADDRESS

A number identifying the node slot that the DKAP *module* occupies. When entering modules, multiple address entries are allowed. When entering a *chnlset*, the number is the address of the module to which the channel set is connected. Only a single module address entry is allowed.

COMMENT

An optional string of 1 to 60 characters, enclosed in double quotation marks, that contains useful administrative information.

HARDWARE CONFIGURATION TYPE

For a DKAP, this parameter option should contain the string *dkap*.

DOWNLOAD SERVER

Specifies the service address of the host or the local *controller* from which the software is to be downloaded to the DKAP.

SOFTWARE VERSION

A string of 1 to 14 characters specifying the software version to be downloaded to the module. If **DOWNLOAD SERVER** is *controller*, enter *standard* as the software version filename. If **DOWNLOAD SERVER** is not *controller*, enter a valid software release number or the filename to be downloaded from the download server.

UPLOAD SERVER

A string of 1 to 8 characters specifying the service address of the host that is to receive the module memory dump prior to the Control Computer initiating a download or after a fault. The default is *none*.

UPLOAD ALWAYS BEFORE DOWNLOAD

Specifies whether (*yes* or *no*) a memory dump should be sent to the upload server before the Control Computer initiates a download.

Parameters *(continued)***UPLOAD ONLY AFTER FAULT**

If **UPLOAD ALWAYS BEFORE DOWNLOAD** is *no*, specifies whether (*yes* or *no*) an upload dump should be sent to the upload server after a fault is detected in the module.

NUMBER OF USER CHANNELS

A number from 1 to 507 that specifies the total number of active *user channels* that can be distributed among channel sets.

CHANNEL SET ID

If **COMPONENT** is *chnlset*, a number from 1 to 63 that identifies the channel set address. The address can be designated as a single number (x), a range of numbers (x-y), a series of up to 10 numbers (x,y,z), or combination of both (x-y,z).

NUMBER OF CHANNELS PER CHANNEL SET

If **COMPONENT** is *chnlset*, a number from 1 to 507 that specifies the remaining active channels per channel set on a DKAP. Prior to receiving this prompt, the system indicates how many active channels remain to be allocated. This number depends on the number entered for the **NUMBER OF USER CHANNELS** prompt.

SERVICE TYPE

If **COMPONENT** is *chnlset*, specifies if the type of service connection provided is associated with a *host*, *terminal*, or *2way* group. A *host* receives calls. A *terminal* originates calls. A *2way* receives calls as a *host* and originates calls as a *terminal*.

GROUP

If **COMPONENT** is *chnlset*, a string of 1 to 8 characters that identifies a logical bundle of channels as a group. DKAP hardware cannot be mixed in the same group with other hardware except for the group *select*.

PREDEFINED DESTINATION

If **COMPONENT** is *chnlset* and **SERVICE TYPE** is *terminal* or *2way*, an optional string of 1 to 39 characters that specifies the receiving group service address or the word *none*, meaning no PDD.

enter dkap

```
CC0> enter
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: module
MODULE ADDRESS: 5
COMMENT [up to 60 chars double quoted]:
"dkap in 5"
HARDWARE CONFIGURATION TYPE [up to 8 chars]: dkapdev
DOWNLOAD SERVER [+(controller)]: +
SOFTWARE VERSION [+(standard)]: +
UPLOAD SERVER [+(none)]: +
NUMBER OF USER CHANNELS [1-507: +(100)]: +
MODULE ADDRESS: 
CC0>
```

SCREEN 3-68. Prompted Entry: Entering DKAP Module Information

```
CC0> enter
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: chnlset
MODULE ADDRESS: 5
CHANNEL SET ID [1-63]: 3
100 channels left to be specified.
NUMBER OF CHANNELS PER CHANNEL SET [1-507: +(100)]: +
SERVICE TYPE [host, terminal, 2way: +(terminal)]: +
GROUP [up to 8 chars]: dkapo
PREDEFINED DESTINATION [+(none)]: +
CHANNEL SET ID [1-63]: 
CC0>
```

SCREEN 3-69. Prompted Entry: Entering DKAP Channel Set Information

remove dkap

The **remove dkap** command enables you to remove currently in-service DKAP components from service. Channel sets must be removed from service before modules. If a module is removed, any of its in-service channel sets are put in the ready-for-service state. These components must be taken out of service before you can input **change dkap**, **delete dkap**, or **restore dkap**.

Syntax

You can input **remove dkap** in prompted or one-line entry.

```
CC0> remove
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]:
MODULE ADDRESS:
For a channel set:
CHANNEL SET ID [1-63]:
```

Parameters

Refer to the parameter definitions supplied in **enter dkap**.

```
CC0> remove
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: chnlset
MODULE ADDRESS: 5
CHANNEL SET ID [1-63]: 3
CC0>
```

SCREEN 3-70. Prompted Entry: Removing a DKAP Channel Set from Service

```
CC0> remove
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: module
MODULE ADDRESS: 5
CC0>
```

SCREEN 3-71. Prompted Entry: Removing a DKAP Module from Service

remove dkap

```
CC0> remove dkap chnlset 5 3  
CC0> remove dkap module 5
```

SCREEN 3-72. One-line Entry: Removing DKAP Components from Service

restore dkap

The **restore dkap** command enables you to put DKAP modules and channel sets into service. Before a channel set can be put into service, the module must first be restored to service, otherwise channel sets are put into the ready-for-service state.

Syntax

You can input **restore dkap** in prompted or one-line entry. To have module downloading execute as a background process, press only after the download has started. Pressing during the prompting sequence terminates the command.

```
CC0> restore
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]:
MODULE ADDRESS:
```

For a channel set:

```
CHANNEL SET ID [1-63]:
```

Parameters

Refer to the parameter definitions supplied in **enter dkap**.

```
CC0> restore
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: module
MODULE ADDRESS: 5
Download in progress for module 5.
All downloads in progress. Hit <DEL> to put process in background.

Download proceeding > > > 
CC0>
```

SCREEN 3-73. Prompted Entry: Restoring a DKAP Module to Service

```
CC0> restore
OBJECTS [...dkap...]: dkap
COMPONENT [module, chnlset]: chnlset
MODULE ADDRESS: 5
CHANNEL SET ID [1-63]: 3
CC0>
```

SCREEN 3-74. Prompted Entry: Restoring a DKAP Channel Set to Service

restore dkap

```
CC0> restore dkap module 5
<system responses>
CC0> restore dkap chnlset 5 3
```

SCREEN 3-75. One-line Entries: Restoring DKAP Components to Service

verify dkap

The output of the **verify dkap** command enables you to check the information currently in the database regarding DKAP modules and channel sets.

Syntax

You can input **verify dkap** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...dkap...]: dkap
MODULE ADDRESS [+(all)]:
```

Parameters

Except for being able to specify the word *all*, meaning every DKAP module, the **MODULE ADDRESS** parameter definition for **verify dkap** is the same as that for **enter dkap**.

```
CC0> verify
OBJECTS [...dkap...]: dkap
MODULE ADDRESS [+(all)]: 5
<report output>
```

SCREEN 3-76. Prompted Entry: Verifying DKAP Module and Channel Set Information

```
CC0> verify dkap 5
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify dkap 5
MODULE ADDRESS: 5
MODULE TYPE: dkap NCHLS: 100
SERVICE STATE: out (manual)
HARDWARE CONFIGURATION TYPE: dkapdev
DOWNLOAD SERVER: controller
VERSION: standard
UPLOAD SERVER: none
UPLOAD ALWAYS BEFORE DOWNLOAD: no
UPLOAD ONLY AFTER FAULT: no
COMMENT: dkap in 5
```

SCREEN 3-77. One-line Entry/Output: Verifying DKAP Module and Channel Set Information

One-line Entry/Output: Verifying DKAP Module and Channel Set Information *(continued)*

```

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify dkap 5
  CHNL  CHNLS  CHNL RANGE  TYPE  GROUP  SRVC
    3    100    5-104    term  dkapo   out
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify dkap 5
  CHNL  PDD
    3   dkaphome
CC0>

```

Report Fields

This table correlates each report field heading shown in the output of **verify dkap** to the parameter for which you are prompted in **enter dkap** or **change dkap**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	Corresponding Parameter Name
CHNL	CHANNEL SET ID
CHNL RANGE	None: range of channels
CHNLS	NUMBER OF USER CHANNELS
COMMENT	COMMENT
DOWNLOAD SERVER	DOWNLOAD SERVER
GROUP	GROUP
HARDWARE CONFIGURATION TYPE	HARDWARE CONFIGURATION TYPE
MODULE ADDRESS	MODULE ADDRESS
MODULE TYPE	None: type of module entered
NCHLS	None: number of active user channels assigned to the module
PDD	PREDEFINED DESTINATION
SERVICE STATE	None: module service state
SRVC	None: channel service state
TYPE	SERVICE TYPE
UPLOAD ALWAYS BEFORE DOWNLOAD	UPLOAD ALWAYS BEFORE DOWNLOAD
UPLOAD ONLY AFTER FAULT	UPLOAD ONLY AFTER FAULT
UPLOAD SERVER	UPLOAD SERVER
VERSION	SOFTWARE VERSION

System Responses

The following sections contain applicable system responses for the **dkap** commands. This section is organized by the key phrase that prefaces each response.

COMMAND FAILED:

Cannot expand mailbox size.

The command processor cannot expand its message queue to receive the requested measurements. If the problem persists, contact your support group.

Could not update module data for channel set <chnlset>.

Add command failed.

Entries for channel set id <chnlset> deleted and remaining entries not done.

Data regarding the specified channel set could not be updated and further command processing was aborted.

Could not update module data for channel set <chnlset>.

Partial changes made.

Remove and restore module to synchronize control computer with module.

Entries for channel set id <chnlset> unchanged and remaining entries not done.

Data regarding the specified channel set could not be updated and further command processing was partially aborted.

Could not update module data for channel set <chnlset>.

System too busy to process command.

Data regarding the specified channel set could not be updated because the system was under a heavy load. Retry the command later.

Error in configuration data. error code = <hex number>

Contact your support group.

Inconsistent configuration.

The hardware must be consistently configured.

Module <addr> is downloading. Try again later.

The specified module is currently downloading software. Retry the command later.

Too many components

The number of components specified exceeds the maximum allowed for the specified component. Make sure that you entered the command correctly and you did not request duplicate status reports.

Too Many Parameters.

The command cannot be completed entered as a one-line entry. Fewer parameters must be specified on the command line.

COMMAND FAILED: *(continued)*

Too many transactions.

Not enough storage space exists to hold the measurements requested. If the problem persists, contact your support group.

Unable to obtain data.

Report output cannot be generated because the system cannot gather the necessary information.

DIAGNOSTICS:

Boot tests in progress - . . .

Offline diagnostic boot test: <PASS/FAIL>

Extended RAM test in progress - . . .

Offline diagnostic memory test: <PASS/FAIL>

Diagnostic download in progress - . . .

Offline diagnostic down-loaded test:

Inst. set: <PASS/FAIL>

Timer test: <PASS/FAIL>

Port 1: <PASS/FAIL>

Port 2: <PASS/FAIL>

The previous responses indicate that the named diagnostic is in progress and whether it passed or failed.

Diagnose completed -

test failed; mismatch of transmitted and received data.

test passed.

The previous responses indicate that the diagnostics process completed and the test passed or failed with the condition noted.

Diagnose not completed -

cannot connect the trace channel to the specified <module> port.

command cannot be sent to module <addr>.

download failed (error code: <num>).

download file not found.

error message text

module task did not respond.

module <addr> did not respond to command. Try again later.

module <addr> did not respond to reinitialization. Try again later.

module <addr> has no resources to process command. Try again later.

module <addr> is being downloaded.

module <addr> is too busy to process command. Try again later.

module <addr> malfunction. Check module hardware.

module <addr> must be in service for on-line diagnose.

module <addr> must be out-of-service for off-line diagnose.

module <addr> unknown error code: <num>.

DIAGNOSTICS: *(continued)***unexpected error code from config (error code: <num>).**

The previous responses explain why the diagnostic process could not complete. The **error message text** response is generated from the diagnostic process resident in the module, and describes the reason for failure, such as **cannot access timer**.

INPUT ERROR:**All <chnlset/module> must be configured identically.**

Each channel set for a particular module must have the same configuration.

Cannot assign <channel set> to a trunk group: <group>.

You must assign the specified port or channel set to a group associated with the same hardware type as the module.

Cannot re-assign channels for channel set while the module is in service.

The module must be removed from service before channels can be reassigned.

Cannot reduce user channels below highest channel in use (<num>).

You cannot reduce the number of user channels below the highest channel number currently in use.

Cannot reduce user channels below total channel set allocation <num>.

You cannot reduce the number of user channels below the total channel set allocation.

Cannot <change/delete/enter> chnlset with module <addr> in service.**Remove before trying command.**

You cannot add, modify, or eliminate channel set information in the database while the module is in service. Use **remove dkap** to take the module out of service. Then retry the command.

DKAP modules cannot reside in concentrators.

DKAP modules can only reside in the node.

Group Does Not Exist: <name>

The specified group has not been entered. Use **enter group**.

Group <name> assigned module type <type>. Cannot mix types.

The specified group is assigned the module type indicated. Different hardware types cannot be mixed within the same group (except for DKAP hardware types).

Group <name> is not a receiving/2way group, as required.

The group must correspond with the type service selected for the channel set.

Group <name> is not an originating group, as required.

The group must correspond with the type service selected for the channel set.

Inconsistent configuration of channel sets on port <num>.

The subsequent configuration of the specified channel set must match the initial configuration.

INPUT ERROR: *(continued)*

Invalid Number: <num>

The number you have input is not valid.

Module address <addr> is empty.

The address specified is not configured.

Module Does Not Exist: <addr>

Information has not been entered for the specified module address.

Module <addr> channel set <num> already configured.

You cannot enter the specified channel set because it is already configured in the database.

**Module <addr> channel set <num> is currently configured;
all channel sets must be removed before deleting modules.**

The specified module channel set has already been entered; module information cannot be deleted unless channel sets are removed from service first.

Module <addr> channel set <num> is not configured. Command did not execute.

The specified module channel set has not been entered.

Module <addr> channel set <num> is not entered.

The module and channel set at the specified address has not been entered.

Module <addr> channel set <num> not configured.

No information has been entered for the channel set at the specified address.

Module <addr> has wrong hardware type.

The specified module is not a DKAP module.

Module <addr> has wrong hardware type stored in database.

The specified module is not configured as a DKAP module in the database.

Module <addr> in service.

Remove before retrying command.

The module must be out of service for the attempted operation to take place. Use the **remove** command to take the specified module out of service.

Module <addr> is already configured. No more channels left for the specified application channel set(s).

The module has been entered and the allocated channel sets have been depleted.

Module <addr> is downloading.

The module is currently downloading software.

Module <addr> is not a DKAP module.

The module at the specified address is not a DKAP module.

Module <addr> is not entered.

The module is not configured in the database as a DKAP module.

INPUT ERROR: *(continued)***Module <addr> is not in service.**

The module at the specified address has been removed from service.

Not an Allowed Value: <input>

The value that you have input is not allowed.

Number Expected: <input>

The string input is alphabetic or alphanumeric. Input a numeric string.

Parameter out of Range: <range>

The specified parameter range is invalid.

Predefined destination <addr> is not a valid service address.

The PDD specified has not been previously entered with **enter address**.

Range not allowed: <input>

You cannot specify a range of numbers.

Slot is reserved: <addr>

The module address specified cannot be used for this type of module.

NO KEY PHRASE:**Cannot abort; <remove/restore> in progress.**

The key was pressed at the system console while the command process could not be terminated.

Data from module <addr> truncated; report will be incomplete.

The module has returned error information that exceeds the buffer size allocated. If the problem persists, contact your support group.

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

Entries for channel set <chnlset> deleted and remaining entries not done.

The reconfiguration could not complete. Contact your support group.

Entries for channel set <chnlset> unchanged and remaining entries not done.

The reconfiguration could not complete. Contact your support group.

Insufficient storage space.

The command processor could not locate enough storage space to accommodate module transactions.

Invalid data is received for <component> <addr>

The component (**module**, **chnlset**) is sending invalid, incomplete, or unexpected data. If the problem persists, contact your support group.

NO KEY PHRASE: *(continued)*

Measurement request for <component> <addr> returned error; report will be incomplete.

The module returned an error code instead of the requested measurements. Measurements for the named component(s) will be missing from the report. If the problem persists, contact your support group.

Measurements not available for <component> <addr>.

The named component (**module**, **chnlset**) is not in service.

Measurements not yet available for module <addr>; try again later.

Measurements were requested before the first five-minute interval collection completed. Wait until the module has been in service for at least five minutes before retrying the command.

Module <addr>, Channel Set <num> not configured.

The specified module/channel set has not been entered into the database.

Module <addr> is already <in/out of> service.

The module at the specified address has already been restored to or removed from service.

Module <addr> is not a DKAP module.

The module at the specified address is a module other than a DKAP.

Module <addr> state unknown -- system did not respond.

The command might have executed successfully; but the system did not communicate the status to the command processor. Use **dstat module** or **verify dkap** to determine the actual module service state. This error message typically appears during heavy use.

No channel sets configured for module <addr>

Status information for all module channel sets has been requested; however, none are configured.

No more channels left for the specified application channel set <chnlset>.

Additional channel sets cannot be entered because all channels have already been assigned to channel sets.

No reply to command.

The reconfiguration could not complete. Contact your support group.

No response from module.

The module is not responding to a request for measurements. If the problem persists, contact your support group.

No resources available to process command.

The system might be busy. Retry the command later.

Not all commands ack'd.

The reconfiguration could not complete. Contact your support group.

NO KEY PHRASE: *(continued)*

Partial changes made. Remove and restore module to synchronize control computer with module.

All changes were not downloaded to module; thus the module and Control Computer are out of sync. Removing and restoring the module will cause data to be redownloaded to module.

Process terminated (DEL received); remaining modules will not be downloaded. All downloads started will proceed in background.

The key was pressed at the system console.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file could have been removed from the disk.) Contact your local support group.

Status request for <component> <addr> returned error; report will be incomplete.

The module returned status information containing invalid error codes or garbled data.

System too busy to process command; Try again later.

If this message recurs, contact your support group.

Time command returned error; partial report may follow.

The time interval during which measurements were collected cannot be determined. If the problem persists, contact your support group.

Time interval shifted; partial report may follow.

Measurements cannot be collected from one time interval specified. If the problem persists, contact your support group.

The module is being downloaded; report will be incomplete.

The module is out-of-service; report will be incomplete.

Because the module is being downloaded or is out of service; the report will be missing some information. If an incomplete report is generated and some information is unavailable for a specific component, the values for those fields are shown as *N/A*.

Too many channel sets specified; report will be incomplete.

Not enough storage space has been allocated for the measurements received. Components are replaced by the component selected. The error occurs only if duplicate measurements are requested in a single report. Retry the command without requesting duplicates.

Unable to retrieve data from module <addr>.

An error occurred in the interface between the Control Computer and the maintenance process. If the problem persists, contact your support group.

REMOVE/RESTORE FAILED: *(continued)*

cannot assign ports for module <addr>. Reboot and try again.

If the message **no more ports** appears, the configuration has more than 10% since the last reboot. A single reboot allocates 10% more channels. If the same failure occurs after a reboot, the configuration is too large.

cannot assign process to port for module <addr>.

The port is assigned. The Control Computer was unable to spawn a process for the port.

cannot get text file for module <addr>.

If the message **no such file or directory** appears, the file system on the generic disk is inconsistent. Refer to recovery procedures and use **fsck** to repair the damage or recover using a backup disk. If the message **out of memory** occurs, too many different call processors were active in the configuration. Remove all of one type (trunks, terminals, sync) before retrying.

Control computer in slot <addr>.

The module address specified is reserved for the Control Computer.

could not send message to config.

The command processor could not send a message to the configuration process.

download failed for module <addr>.

The software download for the specified module failed.

inconsistent database entry for module <addr>. Delete and reenter.

The specified module has been configured inconsistently.

module address <addr> contains a <type> module (<type> expected).

The specified module address contains a module other than that type expected.

module address <addr> contains module address <addr> beyond CLOCK.

The module address specified is higher than the Clock's. Enter the correct address which must be a lower slot than that occupied by the Clock.

module <addr> is being downloaded.

The specified module is downloading software.

module <addr> is in loop-around mode.

The module is still in loop-around mode as a result of diagnostic testing.

no switch memory available. Module <addr> cannot be restored.

The Control Computer cannot allocate the amount of Switch memory the module requires. This situation occurs if all Switch memory was allocated or if it was fragmented by removing and restoring several modules. Reboot the node so the memory space can be reallocated in a contiguous block.

software inconsistency for slot <addr>.

The versions of software on disk are incompatible.

system too busy to process module <addr>. Try again later.

The system is burdened with other call processing tasks. Retry the command later.

WARNING: *(continued)*

Changes to DKAP module parameters will not take effect until the module has been removed and restored.

The changes made will appear in the output of the **verify** command only after the module has been removed and restored to service.

Comment entry failed.

Comment File Compaction Failed; Comment File Deleted

Comment file too large

Disk out of space

System Too Busy

Unable to access comment file

If the comment entry failed because of insufficient memory space, wait until the system is less busy before trying to reenter a comment.

Download server <addr> is not a valid service address.

Upload server <addr> is not a valid service address.

The service addresses must be valid and properly defined before entering/changing any module information in the database.

eia command set

The following commands are related to the **display eia** command.

Verb/Object	Related Objects	Related Verbs
display eia	sam module ty	dstat remove restore dstat

display eia

The **display eia** command enables you to display the status of Electronic Industries Association (EIA) RS-232-C or RS-422 leads for asynchronous SAM and asynchronous TY ports in the same service state. (Leads cannot be displayed for synchronous SAM ports or AIM ports.) For modules using EIA RS-232 leads, the display shows the DTR (data terminal ready) or DCD (data carrier detect) and RTS (request to send) or CTS (clear to send) lead states. For modules using EIA RS-422 leads, the display shows the RR (receiver ready) and TR (terminal ready) for each channel.

To display lead status for TY12 ports, the port can be in or out of service.

To display lead status for asynchronous SAM ports, the SAM module and board must be in service.

To display lead status for TY6 ports, the port must be out of service.

For in-service ports, a warning message indicating that normal data transfer might be interrupted is issued when the report is requested. If a module is using EIA RS-232-C leads and its port is out of service, DCD is lowered, the options are reset to all defaults, DCD is then raised and the lead status is requested at this time. If module ports are in service, DCD or options are not changed. The lead status is requested with no attempt to alter them.

NOTE: For detailed explanations of SAM and TY leads, see the *Synchronous/Asynchronous Module Reference* and the *TY Module Reference*.

Syntax

You can input **display eia (dis eia)** in prompted or one-line entry.

```
CC0> display
OBJECTS [...eia...]: eia
MODULE ADDRESS:
PORT NUMBER [1-12: +(1-12)]:

For a SAM8:
BOARD ADDRESS [1: +(1)]:
PORT NUMBER [1-8: +(1-8)]:

For a SAM16:
BOARD ADDRESS [1: +(1)]:
PORT NUMBER [1-16: +(1-16)]:

For a SAM64:
BOARD ADDRESS [1-2: +(1-2)]:
PORT NUMBER [1-32: +(1-32)]:

For a SAM504:
BOARD ADDRESS [1-16: +(1-16)]:
If BOARD ADDRESS is 1-15:
PORT NUMBER [1-32: +(1-32)]:
If BOARD ADDRESS is 16 and module is not SAMML-connected:
PORT NUMBER [1-24: +(1-24)]:
```


Syntax (continued)

If BOARD ADDRESS is 16 and module is SAMML-connected:

PORT NUMBER [1-19: +(1-19)]:

For a TY12:

PORT NUMBER [1-12: +(1-12)]:

For a TY6:

PORT NUMBER [1-6: +(1-6)]:

If the TY12 or SAM port is in service:

WARNING: Specified ports are in service; normal data transfer may be disrupted.

CONTINUE [yes, no: +(no)]:

Parameters

This section contains explanations of parameters used in the **display eia** prompting sequence that differ from those used in **enter sam** and **enter ty**. Refer to **enter sam** and **enter ty** for further explanations of **MODULE ADDRESS**, **PORT NUMBER**, and **CONTINUE**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

MODULE ADDRESS

For a TY, a number identifying the module address. If the module is installed in the node, the address is <module>. Where: *module* is the node slot number the module occupies.

If the module is installed in a concentrator, the address is <concentrator/module>. Where: *concentrator* is the node slot number that the Link Interface Module (LIM), which connects the concentrator to the module, occupies; and *module* is the concentrator slot number the module occupies.

For a SAM, a number that specifies the node slot that the trunk module, which provides connectivity to the SAM, occupies. If the trunk module is a SAMML, the appropriate SAMML port number must be appended to the address, separated by a period <module.port>. If the module is SAMML-connected with a dual link, the port number specified must be that of the primary port—the odd numbered port.

BOARD ADDRESS

For a SAM, a number from 1 to 16 identifying the address of the board. For a SAM8 or SAM16, the address is 1; for a SAM64, the address range is 1 to 2; for a SAM504, the address range is 1 to 16.

For a SAM16, port numbers are designated 1 to 16. For a SAM64, port numbers are designated 1 to 32. For a SAM504, port numbers are designated 1 to 32 if the board address is 1 to 15; 1 to 24 if the board address is 16 and the module is not SAMML-connected; or 1 to 10 if the board address is 16 and the module is SAMML-connected.

Parameters *(continued)***PORT NUMBER**

A number identifying the address of an asynchronous SAM or TY port. For a SAM8, port numbers are designated 1 to 8. For a SAM64, port numbers are designated 1 to 32. For a SAM504, port numbers are designated 1 to 32 if the board address is 1 to 15; 1 to 24 if the board address is 16; and the module is not SAMML-connected; or 1 to 19 if the board address is 16 and the module is SAMML-connected.

For a TY12, port numbers are designated 1 to 12. For a TY6, port numbers are designated 1 to 6.

Multiple port number entries are allowed. All ports must be in the same service state.

CONTINUE

If the port is in service, specifies whether (*yes* or *no*) the command process should continue to display EIA leads status even though data transfer might be interrupted.

For a SAM or TY12, the port can be in or out of service. For a TY6, the port must be out of service.

```
CC0> display
OBJECTS [...eia...]: eia
MODULE ADDRESS: 60.1
BOARD ADDRESS [1-2: +(1-2)]: 1
PORT NUMBER [1-32: +(1-32)]: 1-3
WARNING: Specified ports are in service; normal data transfer may be disrupted.
CONTINUE [yes, no: +(no)]: yes
<report output>
```

SCREEN 3-78. Prompted Entry: Displaying EIA Lead Status for In-service SAM Ports (SAMML-Connected)

display eia

```
CC0> display eia 60.1 1 1-3
WARNING: Specified ports are in service; normal data transfer may be disrupted.
CONTINUE [yes, no: +(no)]: yes
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M display eia 60.1 1 1-3
```

MOD	BOARD	PORT	TYPE	MOD EIA LEADS		DEV EIA LEADS	
				DCD-DTR	CTS-RTS	DCD-DTR	CTS-RTS
60.1	1	1	SAM	ON	ON	ON	ON
60.1	1	2	SAM	ON	ON	OFF	OFF
60.1	1	3	SAM	ON	ON	ON	OFF

```
CC0>
```

SCREEN 3-79. One-line Entry/Output: Displaying EIA Lead Status for In-service SAM Ports (SAMML-Connected)

```
CC0> display
OBJECTS [...eia...]: eia
MODULE ADDRESS: 22
PORT NUMBER [1-12: +(1-12)]: 1-3,5
WARNING: Specified ports are in service; normal data transfer may be disrupted.
CONTINUE [yes, no: +(no)]: yes
<report output>
```

SCREEN 3-80. Prompted Entry: Displaying EIA Lead Status for In-service TY Ports

```
CC0> display eia 22 1-3,5
WARNING: Specified ports are in service; normal data transfer may be disrupted.
CONTINUE [yes, no: +(no)]: yes
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M display eia 22 1-3,5
```

MOD	PORT	TYPE	MOD EIA LEADS		DEV EIA LEADS	
			DCD-DTR	CTS-RTS	DCD-DTR	CTS-RTS
22	1	TY12	ON	ON	ON	ON
22	2	TY12	ON	ON	OFF	OFF
22	3	TY12	ON	ON	ON	OFF
22	5	TY12	ON	ON	OFF	ON

```
CC0>
```

SCREEN 3-81. One-line Entry/Output: Displaying EIA Lead Status for In-service TY Ports

Report Fields

The display shows the module address, board number (if a SAM), port number, and module type. The leads shown under the heading **MOD EIA LEADS** are the output of the node module; those leads under the **DEV EIA LEADS** are the output of the user device connected to the port.

For SAMs, TY12s, and TY6s which use EIA RS-232-C leads, the display shows the DTR or the DCD lead state and the RTS or CTS lead state. Only one state, *ON* or *OFF*, is shown under each heading. How *ON* or *OFF* should be interpreted depends on whether the port or device is configured to be a DTE or DCE. DTE or DCE behavior depends on the type of cabling and device connected to the port. (For SAMs, the cable type is a configurable option.)

When a port or device acts like a DCE, the module or device controls DCD and CTS. When a port or device acts like a DTE, the module or device controls DTR and RTS. If the module controls the lead, that lead status appears under the **MOD EIA LEADS** heading; otherwise, the device controls it and it appears under the heading **DEV EIA LEADS**.

NOTE: When using a *physical* line monitor, an apparent inconsistency in reporting occurs because this command shows the inputs/outputs of the device to which the module is attached from a TY or SAM perspective. It shows what EIA lead signals the TY or SAM last sent and what EIA lead signals the device last sent.

CTS

If SAM ports with **CABLE TYPE** *dte* or TY ports with **SERVICE TYPE** *modem* or *dialer* are connected to a DCE device, the device raises and lowers CTS. CTS is an output signal from the DCE device to the DTE port. It appears under the **DEV EIA LEADS** heading under the **CTS-RTS** column.

If SAM ports with **CABLE TYPE** *dce* or TY ports with **SERVICE TYPE** other than *modem* or *dialer* are acting like a DCE, the module controls the CTS lead. CTS is an output signal from the port. It appears under the **MOD EIA LEADS** heading under the **CTS-RTS** column.

DCD

If SAM ports with **CABLE TYPE** *dte* or TY ports with **SERVICE TYPE** *modem* or *dialer* are connected to a DCE device, the device raises and lowers DCD. DCD is an output signal from the DCE device to the DTE port. It appears under the **DEV EIA LEADS** heading under the **DCD-DTR** column.

If SAM ports with **CABLE TYPE** *dce* or TY ports with **SERVICE TYPE** other than *modem* or *dialer* are acting like a DCE, the module controls the DCD lead. DCD is an output signal from the port. It appears under the **MOD EIA LEADS** heading under the **DCD-DTR** column.

Report Fields *(continued)*

DTR

If SAM ports with **CABLE TYPE** *dte* or TY ports with **SERVICE TYPE** *modem* or *dialer* are acting like a DTE, the module raises and lowers DTR. DTR is an output signal from the port to the device. It appears under the **MOD EIA LEADS** heading under the **DCD-DTR** column.

If SAM ports with **CABLE TYPE** *dce* or TY ports with **SERVICE TYPE** other than *modem* or *dialer* are connected to a DTE device, the device raises and lowers DTR. DTR is an output signal from the DTE device. It appears under the **DEV EIA LEADS** heading under the **DCD-DTR** column.

RR

An RS-422 lead that indicates receiver ready. It is similar to DCD for RS-232-C interfaces.

RTS

If SAM ports with **CABLE TYPE** *dte* or TY ports with **SERVICE TYPE** *modem* or *dialer* are acting like a DTE, the module raises and lowers RTS. RTS is an output signal from the port to the device. It appears under the **MOD EIA LEADS** heading under the **CTS-RTS** column.

If SAM ports with **CABLE TYPE** *dce* or TY ports with **SERVICE TYPE** other than *modem* or *dialer* are connected to a DTE device, the device raises and lowers RTS. RTS is an output signal from the DTE device. It appears under the **MOD EIA LEADS** heading under the **CTS-RTS** column.

TR

An RS-422 lead that indicates terminal ready. It is similar to DTR for RS-232-C interfaces.

System Responses

This section contains system responses for **display eia**. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Could not obtain EIA leads.

The status of the EIA control leads was not returned to the command processor. Most likely, this system response indicates a faulty module.

Database Full - Entry Failed: Module <addr>.

New TY or SAM information cannot be added to the database. Delete unused database information or contact your support group.

Invalid result from port process.

The port process sent an invalid response to the command processor.

Too Many Parameters

The command line contained more parameter options than allowed. The command exits; you can start over.

Unable to communicate with port process.

The **display eia** process cannot communicate with the Control Computer process responsible for the port process.

DIAGNOSTICS:

Cannot Make Maintenance Process Special.

Both Control Computer ports are configured as console ports and another **diagnose** command is currently running on the other console port. Only one **diagnose** command can run at any time. Wait a few minutes and retry the command.

Cannot Send Message To Port Process.

The diagnostic process cannot communicate with the port process, indicating that the Control Computer has software problems or is overloaded. Re-enter **diagnose ty**.

CAN'T TALK TO INTERFACE MODULE.

Although a TY module is in the slot, communication between the port process and module has failed.

COMMUNICATION PROBLEM BETWEEN PORT PROCESS AND PORT.

For a TY module, the port process detected a procedural error or an incorrect response between itself and the port. Repeat the test. If the test continues to fail, remove the defective port from service.

COULD NOT PUT PORT IN LOOP-AROUND MODE.

Repeat the test. For a TY module, this message could indicate a communication problem among the port, board, and Control Computer software.

DIAGNOSTICS: *(continued)*

(The port did not return the correct acknowledgments to the Control Computer.) This message could also mean that the port cannot be taken out of the loopback mode.

However, if the external port test was successful and no apparent transmission problems exist, then continue to use the port. If the port has other problems, remove it from service.

COULD NOT RUN LOOP-AROUND TEST.

The loopback diagnostic process could not be started, indicating a software problem in the Control Computer. Repeat the test.

CTS IS ON WHEN RTS IS OFF.

CTS IS OFF WHEN RTS IS ON.

DCD IS ON WHEN DTR IS OFF.

DCD IS OFF WHEN DTR IS ON.

When running the external port diagnostic, the connector ties together outgoing and incoming leads to return the same data sent. These messages indicate a physical hardware problem; control signals were not transmitted or received properly because of a faulty port or loopback connector.

DIAGNOSTIC EXITS

The diagnostic exited without running the test because you specified *no* when prompted to move hardware to run the diagnostic.

DIAGNOSTIC EXITS DUE TO DELETE

The diagnostic exited because was pressed.

DIAGNOSTIC EXITS DUE TO UNEXPECTED MESSAGE FROM PORT PROCESS.

A transient software error occurred. Repeat the test. If the error continues, contact your support group.

DIAGNOSTIC EXITS DUE TO UNEXPECTED M_DIAG FROM PORT PROCESS.

A transient software error occurred. It was expecting an M_DIAG_ACK. Repeat the test. If the error continues, contact your support group.

DIAGNOSTIC EXITS DUE TO UNEXPECTED M_DIAG_ACK FROM PORT PROCESS.

A transient software error occurred. It was expecting an M_DIAG. Repeat the test. If the error continues, contact your support group.

DIAGNOSTIC REQUIRES SERVICE INTERRUPTION TO PORT.

USE THE `remove` COMMAND TO TAKE THE PORT OUT OF SERVICE.

THEN BEGIN THIS COMMAND AGAIN.

The port being tested is in service. Enter **remove ty** to take the port out of service; then, re-enter **diagnose ty**.

Did Not Receive 2nd Message From Port Process.

The diagnostic did not receive a message from the port process, indicating a software problem or overload. Re-enter **diagnose ty**. If the message reappears, log it. To get the port out of loopback mode, restore it to service by entering **restore ty**.

DIAGNOSTICS: *(continued)***ERROR CONDITION CODE <num> DURING COMMUNICATION WITH CONFIG.**

The error code number identifies the process in trouble and the task that failed.

- 4 The Control Computer has a bug that was probably introduced by a recent software change. Rerun the diagnostic.
- 5 A **sendmsg** system call failed. Rerun the diagnostic. If the problem continues, log the error.
- 6 A **recv** system call failed. Rerun the diagnostic. If the problem continues, log the error.
- 7 A **recv** system call timed out waiting for a response from the configuration process. Rerun the diagnostic. If the problem continues, log the error.
- 8 A **recv** system call returned a message from the configuration process that the Control Computer does not understand. Rerun the diagnostic. If the problem continues, log the error.

If the configuration process has a problem with the content of a message received or with executing the command in the message, it generates these error codes:

- 1 For some reason, such as a download in progress, the request cannot be honored at this time.
- 2 The TY module is not consistent with the type of module residing in the given module address. Most likely, the slot is empty or the switch is not enabled, or the module might be so defective *stat* cannot recognize it.
- 3 An error occurred during the remove/restore operation.
- 4 The *stat* process found this module not in the expected state.
- 5 The *stat* process found this module with a slot number higher than that of the Clock.
- 6 The specified parameters given make no sense, implying a software bug in the Control Computer or in the configuration process.
- 7 The configuration process cannot load the text.
- 8 The configuration process cannot assign any ports.
- 9 The configuration process cannot associate the process.
- 10 The configuration process cannot allocate switch memory.

ERROR FROM PORT PROCESS.

The process responsible for port diagnostics experienced a software problem with the Control Computer. Repeat the diagnostic. If the message reappears, log the error.

DIAGNOSTICS: *(continued)*

ERROR IN LOOP-AROUND DATA COMPARISON

The loopback diagnostic revealed that the data sent to the port did not match the data received from the port. One of the following messages indicates a subsequent problem in the communication path within the loop. If a communication line is involved, the problem could be noise on the line. Repeat the test. If a communication line is not involved, the problem is most likely faulty hardware.

INCORRECT DATA RETURNED

Although the correct amount of data was returned, it was not the same data sent. If the test type was remote modem, the problem could be a noisy communication path. If the test type was external loop, it could be a bad board. When the internal port test fails, any cables connected to the I/O board should be removed, and the test should be rerun.

NO DATA RETURNED

No data was returned to the diagnostic.

NOT ENOUGH DATA RETURNED

Insufficient data was returned to the diagnostic.

TOO MUCH DATA RETURNED

More data was returned to the diagnostic than was sent. When the internal port test fails, any cables connected to the I/O board should be removed, and the test should be rerun.

ERROR IN SENDING MESSAGE TO CONFIG

Because of possible database errors, a missing board, Control Computer errors, or a bad disk, the configuration process could not associate the diagnostic text with the port being diagnosed. Make sure the module and I/O board are installed properly. Input **verify module** and **dstat module** to check the integrity of the module and database. If problems do not surface, repeat the command on other modules. If the command executes successfully on other modules, the module might be faulty. Replace the board and rerun the diagnostic. If the command does not execute successfully, the diagnostic text file might not reside on disk. This file, *termdiag*, is in the */wn00/dkcproc* directory. Verify its presence by entering **utilsh** to go into the utility mode and then entering **cd** to access the directory. If the file is missing, replace it with a backup copy and repeat the diagnostic.

INVALID RESULT FROM PORT PROCESS

An unexpected result code was received from the port process. This message should never occur; contact your support group.

LOOP_AROUND COMPLETED SUCCESSFULLY

The loopback diagnostic process for the specified module and port was successful.

NO DATA BASE ENTRY FOR MODULE

The diagnostic could not find a database entry for the module containing the port to be tested. Enter **verify module**. Repeat the diagnostic. If the message reappears, log the error.

DIAGNOSTICS: *(continued)***NO RESPONSE FROM PORT PROCESS**

The Control Computer process responsible for port diagnostics did not communicate with the Control Computer. A software problem exists in the Control Computer or it is overloaded. Repeat the diagnostic. If the message reappears, log the error.

Place <Local/Remote> Modem Back Into Non-Looping Mode to Avoid Activating Alarms.

Remove the local/remote modem from loopback mode to avoid activating the alarm **Too Many Invalid Attempts**.

PLEASE WAIT TEST IS RUNNING.

This response indicates diagnostics are running properly. If you do not receive this message, the board might be faulty. Check the board by entering **dstat module <high>**. If the module type is not the same as the expected type, the **dstat** process did not receive valid status packets from the module. If the serial numbers do not match, the Control Computer has hardware problems that diagnostics cannot pinpoint.

PORT MAY STILL BE IN LOOP-AROUND MODE.

The port could be in loopback mode. Restore the port to service and remove it from service again. Repeat the diagnostic to determine if the port passed or failed. If the message reappears, the port is bad; leave the port out of service.

PORT PROCESS ABORTED BY CONFIG.

Because of probable hardware problems (such as a manual reset, a mode switch put in a position other than ENABL, or the circuit or the I/O board being physically removed), the configuration process killed any process associated with ports on the module. Check the physical integrity of the module. If it is satisfactory, input **dstat module** to display module status. If the status proves satisfactory, rerun the test. If this message is repeated, replace the module.

Port <num> is unassigned.

The port being diagnosed is not entered. If it is the only port to be tested, press to exit the diagnostic and input **enter ty** to add module options. Otherwise, test the other ports before entering this port.

Replace the Loop-Around Connector With Normal Connection to Avoid Activating Alarms.

Remove the loopback connector or cable from the port to avoid activating the alarm **Too Many Invalid Attempts**.

TEST DID NOT COMPLETE DUE TO PREMATURE HANGUP BY PORT.

The module port hung up on the port process because of a broken connection on the line that extends from the port to the terminal or host equipment.

TEST DID NOT COMPLETE DUE TO RECEPTION OF EXTRANEIOUS DATA ON THE LINE.

Some source is generating unwanted data on the line; it should be investigated and removed. If it occurs during the internal port test, remove all cabling from the port and rerun the test.

DIAGNOSTICS: *(continued)*

TEST DID NOT COMPLETE DUE TO RECEPTION OF TOO MANY DTR/DCD TRANSITIONS.

Signal noise occurred in the test loop. The carrier is going up and down frequently.

Disconnect all cables and run the internal port test. If the problem continues, reconnect the cables and equipment, piece by piece, and repeat the diagnostic.

THE LOCAL VDM IS BAD.

EITHER THERE IS A BAD LINE OR THE REMOTE VDM IS BAD.

THE LOCAL VDM IS STUCK IN THE LOOP-AROUND MODE.

THE REMOTE VDM IS STUCK IN THE LOOP-AROUND MODE.

Any of these messages is issued when a VDM is attached to the particular line.

Waiting for M_DIAG

The diagnostic did not send an initial message to the Control Computer. The system might be running slowly or an error might have occurred. Reissue the command. Reissue the command on other modules. Run **fsck** on the file system.

All ports must have the same service state.

Port <num> on mod <addr> is <in/out of> service.

Port <num> is <in/out of> service.

For a TY12, all ports must be either in service or out of service. The service state of the first port is used to determine whether the remaining ports are deemed "in" or "out of service." For a TY6, all ports must be out of service.

INPUT ERROR:

A dual trunk SAM must be addressed by its primary port number.

The SAMDL is a dual-link to a SAMML-connected SAM: one link, designated as the primary, is connected to an odd-numbered port on a SAMML. The other, designated the secondary link, is connected to a consecutive, even-numbered port on a SAMML. To address any port on a SAMDL, its primary port on the SAMML must be specified.

A port number may not be appended to this module's address.

Only SAMML-connected SAMs use the module address format: *module.port*.

A port number must be appended to the SAMML module addresses.

Re-enter the desired address using this format: mod.port.

SAMML-connected SAMs must have the module address: *module.port*.

All ports configured for module <addr>.

New ports for the specified module cannot be entered; all ports are configured. Input **change ty** for each port or subset of ports that are configured differently.

All ports must have identical options.

To change a set of ports, the specified ports must be configured exactly the same. Input **change ty** for each port or subset of ports that are configured differently.

INPUT ERROR: *(continued)*

All ports must have the same service state.

Port <num> on board <num> mod <addr> is <in/out of> service.

Port <num> is <in/out of> service.

For a SAM, all ports must be either in service or out of service. The service state of the first port is used to determine whether the remaining ports are deemed "in" or "out of service."

Cannot assign to a trunk group.

Ports can be assigned to receiving, originating, or two-way groups of TY ports only.

Cannot do port EPN/CUG assignments for multiple module addresses. Re-enter command or use change.

EPNs/CUGs can only be assigned to ports on a TY module, one module at a time.

Cannot remove/restore a mixed collection of ty6 and ty12 modules.

For **remove ty** and **restore ty**, the module address(es) specified at the **MODULE ADDRESS** prompt must be those of the same TY type.

Closed user group profile id <id> is not entered.

The specified CUG profile ID has not been entered. Use **enter profile**.

CUG profile <id> is a gateway CUG profile.

The specified profile is a gateway CUG profile.

CUG profile <id> is not entered.

The specified CUG profile does not exist. Input **enter profile**.

Disp eia currently running, try again.

If both administration ports are configured as consoles, and this command is entered on both consoles, the command fails on the second console.

An endpoint number is a 4 digit number ranging from 0000 through 9999.

Re-enter the endpoint number, adhering to the guideline statement.

Group has non-TY hardware; cannot mix hardware types.

For a TY module, the port cannot be assigned to a group that is already associated with another hardware type. Enter **verify group** to determine the module type that uses this group.

Group must be <originate/receive/2way>-only.

For a TY module, The group to which the service type is assigned must be an originating, receiving, or two-way group.

Group type must be originate or two-way.

For a TY module, The group specified must be an originating or a two-way group. Specify a group to correspond with the service type selected.

ISN Concentrator Not Allowed.

A TY module cannot reside in an Information Systems Network (ISN) concentrator.

INPUT ERROR: *(continued)*

Module <addr> board <num> is not entered.

The specified SAM board is not configured.

Module <addr> board <num> is not in service.

The specified SAM board has been removed from service. Use **restore** to put it back into service.

Module <addr> board <num> port <num> is not entered.

The specified SAM board and port number are not configured in the database.

Module <addr> board <num> port <num> must be entered for async service to display eia.

The protocol for the SAM port must be asynchronous to display EIA leads. Use **change** to modify the protocol.

Module <addr> board <num> port <num> must be out of service to display eia.

The specified SAM board and port must be taken out of service with **remove** before EIA leads can be displayed.

Module <addr> is being downloaded. Try again later.

You cannot execute **display eia** while the module is downloading. Wait until the download has completed, then retry the command.

Module <addr> is not entered.

The specified module is not configured.

Module <addr> is not in service.

The specified module address has been removed from service. Restore the module and retry the command.

Module <addr> port <num> is not entered.

The specified module port is not configured.

Module <addr> port <num> must be out-of-service to display eia.

Use **remove** to take the module port out of service before using **display eia**.

Module Does Not Exist: <addr>.

The specified TY module is not configured.

Module Has Wrong Hardware Type: <addr>.

The TY module address specified does not contain the module type expected.

Module <addr> channel <num> is unassigned. Command did not execute.

A TY module or channel within the range specified is not configured.

Module <addr> is a <type> type module, ty expected.

The specified module is a type other than a TY module.

INPUT ERROR: *(continued)***Module <addr> is in service.**

The specified TY module is in service; cannot delete or change information for an in-service module. Enter **verify ty** to check the service state of the module.

Module <addr> is not a <TY/TY-6/TY-12>.

The module entered at the specified address is a module type other than a TY module.

Module <addr> is not <configured/entered>.

The specified TY module has not been added to the configuration database.

Module <addr>: out of service <due to fault>.

The TY module specified has been taken out of service manually or automatically because of a fault. Enter **dstat module** to obtain detailed information about the fault. Enter **restore ty** to put module ports back into service.

Module <addr> port <num> already configured.

For a TY module, the specified port is already configured for the module indicated. Enter **verify ty**.

Module <addr> port <num> in service.

The specified TY module port is currently in service.

Module <addr> port <num> not configured.

The port is not configured for the indicated TY module. Enter **enter ty**.

Modules do not have same external baud rate.

The TY modules must have identical external baud rates.

Modules do not have the same hardware type.

The specified TY modules must be the same type of hardware.

No Default Allowed: +

Data was not entered in response to the prompt. This parameter has no provision for a default value.

Not an Allowed Value.

Value specified is not within the allowed range.

Only one external baud rate can be selected for all 12 ports.

All TY ports must be configured at identical external baud rates.

Parameter out of Range: <input>.

Parameter specified is not within the allowed range.

Port <num> has not been entered.

The specified TY port number has not been configured.

Port <num> is not one of those being entered.

Select a TY port that was specified at the **PORT NUMBER** prompt.

INPUT ERROR: *(continued)*

Port <num> is out of service.

The TY port specified is not in service. Use the appropriate **restore** command to put the port back into service.

Range Specification Error: <input>.

Values specified are out of range.

SAMML module <addr> is being downloaded. Try again later.

The specified SAMML module is downloading software. Retry the command later.

SAMML module <addr> is not in service.

The specified SAMML module has been taken out of service. Use **restore** to return it to service.

Service address <addr> does not exist.

The specified service address is not entered. Use **enter address**.

Slot is empty or wrong hardware module.

The module address specified is not configured; or, the module address specified does not contain a TY or SAM.

Slot is reserved: <addr>.

The specified address cannot be used for this module.

Slot <addr> is not a TY.

The module entered in the specified address is a type other than a TY module.

This EPN or range conflicts with existing logical device address <addr>.

The EPN or range is already configured as an EPN for a TY port. Enter a different EPN or range or delete the existing address. Enter **verify module** to determine which device the EPN(s) are assigned to, or enter **verify epn** to check the EPN(s).

VDMs cannot be used with EIA flow control.

If a VDM is connected to a TY, flow control for the device can only be *xon/xoff* or *none*.

<nnnn> is external baud rate - hwr strap must match with <nnnn>.

The TY module hardware must be strapped to match the specified external baud rate.

Wrong module type; module must be TY or SAM.

You tried to execute **display eia** on a port other than a TY, or SAM port.

module address <addr> is beyond CLOCK.

The module address specified is higher than the Clock. Enter the correct module address (which must be lower than the slot number occupied by the Clock) and retry the command.

INPUT ERROR: *(continued)***module <addr> is in loop-around mode.**

The remove/restore operation cannot progress because diagnostics were run and the module is still in the loopback mode.

no switch memory available. Module <addr> cannot be restored.

The Control Computer cannot allocate the amount of switch memory the module requires. (All switch memory has been allocated or was fragmented by removing and restoring several modules.) Reboot the node by entering **initialize circuits** or **initialize hardware** (not **initialize controller**) to re-allocate memory space in a contiguous block.

system too busy to process module <addr>. Try again later.

The Control Computer is under a heavy load. Retry the command later.

unrecognized error code for module <addr>.

The command processor received an error code from the specified module that it could not recognize.

NO KEY PHRASE:**Cannot abort; <remove/restore> in progress.**

The key was pressed during a noninterruptible process.

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

Module <addr> is already out of service.

The specified module has already been removed from service.

Module <addr>: no held calls.

There are not any held calls for the specified module.

Module <addr> state unknown -- system did not respond.

The command might have executed successfully, but the system did not communicate the status to the command processor. Use **dstat module** or **verify module** to determine the actual module service state. This message typically appears during heavy use.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (A file might have been removed from the disk.) Contact your local support group.

REMOVE/RESTORE FAILED:

cannot assign ports for module <addr>. Reboot and try again.

If the message **no more ports** appears, the configuration has grown more than 10% since the last reboot. A single reboot allocates 10% more channels. If the same failure occurs after a reboot, the configuration is too large.

cannot assign process to port for module <addr>.

The port is assigned. The Control Computer was unable to spawn a process for the port.

Control computer in slot <addr>.

The module address specified is reserved for the Control Computer.

could not send message to config.

The command processor could not send a message to the configuration process regarding the remove/restore operation.

inconsistent database entry for module <addr>. Delete and re-enter.

Hardware components must be consistently configured.

module address <addr> contains a <type> module (<type> expected).

The specified module address contains a different module than the type anticipated.

WARNING:

Only One External Baud Rate Can Be Selected For All 12 Channels

The hardware strap on the TY circuit pack must be manually set to the same external baud rate chosen via this command.

<rate> is External Baud Rate - Hardware Strap MUST Match With <rate>

The hardware strap on the TY circuit pack must be manually set to the same external baud rate chosen via this command.

VDMs do not support EIA flow control.

A voice/data multiplexer is connected to a TY port and EIA flow control was enabled.

Specified ports are in service; normal data transfer may be disrupted."

The SAM or TY ports are in service. If **display eia** is run, data transfer might be disrupted.

epn command set

The following commands are related to the **epn** command set.

Administration	Related Objects	
verify epn	address	msm
	aim	sam
	cpm	ty
	gateway	x25
	module	x25p

verify epn

The output of the **verify epn** command enables you to check the database contents to determine if an X.121 endpoint number (EPN) or range is associated with a port or a local service address, or whether it is unassigned. However, this output provides only a summary of the EPNs or ranges in the database. The **verify** command associated with the particular object (**address**, **aim**, **cpm**, **msm**, **sam**, **ty**, **x25**, **x25p**) provides detailed information about the local service address or port, respectively.

Syntax

You can input **verify epn** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...epn...]: epn
ENDPOINT NUMBER [0000-9999, all: +(all)]:
REPORT TYPE [assigned, unassigned, both: +(both)]:
```

Parameters

ENDPOINT NUMBER

A unique four-digit address ranging from 0000 to 9999 that can be a single four-digit address or two four-digit addresses separated by a dash; where: the first address is the low end of the range and the second address is the high end. In addition, the word *all*, meaning every EPN, can be specified.

A single EPN, a range of EPNs, or a combined list of up to 12 EPNs separated by commas, can be entered. A total of six ranges can be specified if only ranges are listed.

REPORT TYPE

Specifies the class of EPN as *assigned* (displays all EPNs that are service addresses and/or associated with ports), *unassigned* (displays all EPNs that are not assigned), or *both*.

```
CC0> verify
OBJECTS [...epn...]: epn
ENDPOINT NUMBER [0000-9999, all: +(all)]: +
REPORT TYPE [assigned, unassigned, both: +(both)]: +
<report output>
```

SCREEN 3-82. Prompted Entry: Verifying Assigned and Unassigned EPN Information

```

CC0> verify
OBJECTS [...epn...]: epn
ENDPOINT NUMBER [0000-9999, all: +(all)]: +
REPORT TYPE [assigned, unassigned, both: +(both)]: unassigned
<report output>

```

SCREEN 3-83. Prompted Entry: Verifying Unassigned EPN Information

```

CC0> verify epn all both
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify epn all both

  EPN          ASSIGNED
             TO
  0000-9089    unassgn
  9090         address
  9091-9190    unassgn
  9191         address
  9192-9291    unassgn
  9292         ty12    MODULE ADDRESS: 39      PORT: 1      CHNL RANGE: 2-4
  9292-9492    unassgn
  9494         ty12    MODULE ADDRESS: 40      PORT: 2
  9495-9594    unassgn
  9595         ty12    MODULE ADDRESS: 40      PORT: 3
  9596-9999    unassgn
CC0>

```

SCREEN 3-84. One-line Entry/Output: Verifying Assigned and Unassigned EPN Information

```

CC0> verify epn all unassigned
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify epn all unassigned

UNASSIGNED ENDPOINT NUMBERS

  0000-9089    9192-9291    9292-9492    9495-9594    9596-9999
  9091-9190
CC0>

```

SCREEN 3-85. One-line Entry/Output: Verifying Unassigned EPN Information

Report Fields

Each report field unique to **verify epn** is defined in the following table.

Report Field Name	Definition
ASSIGNED TO	Module or service address to which the EPN is assigned
BOARD	If the EPN is unassigned, board number of the indicated SAM/SAMML module
CHNL RANGE	Channel range assigned to indicated module
EPN	Endpoint number for which information is supplied
MODULE ADDRESS	Module address of the indicated module
PORT	Port number on the indicated module
UNASSIGNED ENDPOINT NUMBERS	Those EPNs that were not yet assigned to a module or service address

System Responses

This section contains system responses for the **verify epn** command. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

EPN <address is/addresses are> unassigned.

The requested output cannot be generated because the EPN/EPNs specified are not administered.

EPN <address is/addresses are> assigned.

The requested output cannot be generated because the EPN/EPNs specified were already administered.

No EPN addresses are assigned.

The requested output cannot be generated because EPN/EPNs were not administered in the database.

No EPN addresses are unassigned.

The requested output cannot be generated because all EPN/EPNs were administered.

INPUT ERROR:

An EPN must be 4 digits.

The EPN/EPNs must consist of four numbers.

Both the low and high EPN in a range must be 4 digits.

An EPN range consists of two sets of four numbers separated by a dash: 0000-9999.

Input String too Long: <string>

Your entry for the specified parameter contained too many characters. When you are reprompted for this parameter, enter the correct number of characters.

Not an Allowed Value: <value>

The value specified is not one of the choices in the prompt.

The first EPN in a range must be less than the second EPN.

The first EPN in the range entered is greater than the second EPN. An EPN range must be entered with the lower EPN as the first number in the range and the higher EPN as the second number; for example: 1020-1030.

exit, stop, and sync command set

The following commands are related to the **exit**, **stop**, and **sync** command set.

Verbs	Related Verb	Related Object
exit		
stop	initialize	controller
sync	initialize	controller

exit

The **exit** command enables you to leave or exit the system console session if console security was administered for the node and the controller mode switch is in the ENABL position.

Syntax

You can input **exit** in one-line entry only.

```
CC0> exit
```

Parameters

None.

```
CC0> exit
PASSWORD:
```

SCREEN 3-86. One-line Entry: Departing from the System

stop

The **stop** command enables you to halt the execution of Control Computer software in an organized manner. Typically, active calls are not interrupted. Before halting software execution, **stop** (like **initialize controller**) performs an automatic synchronization of the database—that is, it matches the contents of memory at that given instant to the contents of the disk. When **stop** is invoked during a session maintenance call reroute or trunk reversion, the synchronization process can take longer to complete. If the synchronization process fails, this message appears:

Database is not synchronized due to configuration database update failure.

You can execute **stop** while the controller mode switch is the ENABL (up) or the DIAG* (center) position. When the controller mode switch is in the ENABL position and **stop** is entered at the active Control Computer (**CC0** or **CC1**) prompt or the standby Control Computer (**SC0** or **SC1**) prompt, the Control Computer to which it is addressed reboots, goes to loader mode, outputs the prompt **LOADER>**, and waits 45 seconds for input. If input is not received within that time, the Control Computer continues to boot. If input is received within that time, the timer is reset for 45 seconds after each character.

The only command that can be executed from the standby Control Computer is **stop**.

Syntax

You can input **stop** in one-line entry only.

```
CC0> stop
```

Parameters

None.

```
CC0> stop
*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type ? for help
LOADER>
```

SCREEN 3-87. One-line Entry/Output: Halting Control Computer Software Execution

* Unless console security is being initially administered or the port password is being changed, the controller mode switch should always be in the ENABL position.

```
CC0> stop
Database is not synchronized due to configuration database update failure.
*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type ? for help
LOADER>
```

**SCREEN 3-88. One-line Entry/Output: Halting Control Computer Software Execution
(With No Database Synchronization)**

sync

The **sync** command enables you to copy the contents of all internal memory buffers, which contain any recent changes made to the configuration database, to the active file system on the active disk. (That is, the command *synchronizes* the contents of memory buffers with the contents of the disk.) The software does this procedure automatically—once every five minutes if a change occurred. In addition, some commands synchronize the database when they complete execution. However, **sync** enables you to do this procedure on demand.

For dual disk configurations with **AUTOMATIC BACKUP** set to *on*, a backup of the standby disk is executed as well. Use **sync** before rebooting the Control Computer.

Syntax

You can input **sync** in one-line entry only.

```
CC0> sync
```

Parameters

None.

```
CC0> sync
CC0>
```

SCREEN 3-89. One-line Entry/Output: Synchronizing Memory Buffer Contents to the Active Disk

System Responses

The **exit** command does not have any associated system responses.

This section contains system responses for **stop** and **sync**. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Could not sync the database; try using the backup command to save it. Use the stop command to force a reboot.

The database could not be synchronized. Use **backup** and **stop** as instructed.

DATABASE BEING UPDATED. TRY AGAIN LATER

The database is being updated (that is, there is database read/write contention). Wait awhile; then retry **sync**.

Not enough memory to run command, try again later or remove some modules from service.

Not enough memory currently exists; remove some modules and retry **sync**.

Sync did not complete, try again later.

The database was not initially updated. The system is attempting to update the database again.

INPUT ERROR:

Command Input Failed.

Retry **sync**.

The only standby control computer command is 'stop'.

At the standby Control Computer prompt (**SC0>** or **SC1>**) the only operations command that can be entered is **stop**. To use other operations commands, switch to the active Control Computer.

NO KEY PHRASE:

Database is not synchronized due to configuration database update failure.

The **stop** command was invoked during a session maintenance call reroute or trunk reversion. The synchronization process failed.

WARNING:

The console password for this port has expired.

Use **change node** to modify the port password.

The console password for this port will expire in <number> day(s).

Use **change node** to modify the port password.

gar command set (BNS-2000 only)

The following commands are related to the **gar** command set.

Administration	Operation	Maintenance	Related Objects
change gar delete gar enter gar verify gar	remove gar restore gar	diagnose gar dmeas gar dstat gar	ai address comment measurements module schedule shelf* trace

* This object should be entered before configuring a GAR in the database.

change gar (BNS-2000 only)

The **change gar** command enables you to modify information regarding a GAR module in the database. When the module is in service, only the **COMMENT** and **MODULE MEASUREMENTS** parameters can be changed. Only one module can be changed at a time.

Syntax

You can input **change gar** in prompted entry only. The command syntax for **enter gar** and **change gar** is similar. The defaults for **change gar** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

```
CC0> change
OBJECTS [...gar...]: gar
MODULE ADDRESS:
If the GAR is out of service:
  DOWNLOAD SERVER [+(current server)]:
If the current server is not "controller" and a new entered server is "controller":
  SOFTWARE VERSION [+(standard)]:
If the current server is "controller" and a new entered server is not "controller":
  SOFTWARE VERSION:
If the current server and new entered server are "controller" or
if the current server and new entered server are not "controller":
  SOFTWARE VERSION [+(current version)]:
COMMENT [up to 60 chars double quoted, none: +(current comment)]:
MODULE MEASUREMENTS [yes, no: +(current value)]:

Command loops to MODULE ADDRESS prompt.
```

Parameters

Refer to the parameter definitions supplied in **enter gar**.

```
CC0> change
OBJECTS [...gar...]: gar
MODULE ADDRESS: 8
DOWNLOAD SERVER [+(controller)]: +
SOFTWARE VERSION [+(standard)]: +
COMMENT [up to 60 chars double quoted, none:
+(current comment)]: +
MODULE MEASUREMENTS [yes,no:+(no)]: yes
MODULE ADDRESS: 
CC0>
```

SCREEN 3-90. Prompted Entry: Changing GAR Information

delete gar

delete gar (BNS-2000 only)

The **delete gar** command enables you to delete GAR module information from the database. You can delete information for multiple GARs at the same time.

Syntax

You can input **delete gar** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...gar...]: gar
MODULE ADDRESS:
```

Parameters

Refer to the parameter definitions supplied in **enter gar**.

```
CC0> delete
OBJECTS [...gar...]: gar
MODULE ADDRESS: 8
CC0>
```

SCREEN 3-91. Prompted Entry: Deleting GAR Information

```
CC0> delete gar 8
```

SCREEN 3-92. One-line Entry: Deleting GAR Information

diagnose gar (BNS-2000 only)

The **diagnose gar** command enables you to run GAR module diagnostics.

The module diagnostics check the integrity of the hardware. These tests include boot-up sanity tests. To run module diagnostics, the GAR module must be out of service.

Syntax

You can input **diagnose gar** in prompted entry only.

```
CC0> diagnose
OBJECTS [...gar...]: gar
MODULE ADDRESS:
TEST TYPE [mod_test: +(mod_test)]:
```

Parameters

This section explains parameters used in the **diagnose gar** prompting sequence that differ from those used in **enter gar**. Refer to the Syntax section for the prompting sequence.

MODULE ADDRESS

A single number identifying the node slot that the GAR module occupies. Only a single module address can be entered.

TEST TYPE

Checks various parts of the module hardware. It includes boot checks and component and subsystem tests.

```
CC0> diagnose
OBJECTS [...gar...]: gar
MODULE ADDRESS: 8
TEST TYPE [mod_test: +(mod_test)]: mod_test
<test results>
CC0>
```

SCREEN 3-93. Prompted Entry: Running GAR Module Diagnostics

dmeas gar (BNS-2000 only)

The **dmeas gar** command enables you to generate on-demand measurements reports for an in-service GAR module. These reports contain traffic, performance, and utilization measurements for the module.

Scheduled measurements for a GAR module are generated in machine-readable format only through *StarKeeper® II* NMS.

Syntax

You can input **dmeas gar** in prompted or one-line entry.

```
CC0> dmeas
OBJECT [...gar...]: gar
MODULE ADDRESS:
INTERVAL [current, previous: +(current)]:
```

Parameters

This section explains parameters used in the **dmeas gar** prompting sequence that differ from those used in **enter gar**. Refer to the Syntax section for the prompting sequence, system defaults, and parameter options.

INTERVAL

Specifies if the on-demand report is to be printed for the *current* or *previous* reporting interval. The *current* interval includes measurements collected for the portion of the quarter-hour (15-minutes) that is presently elapsing up to the time the report was requested; the *previous* interval includes measurements already collected for the full prior quarter-hour; the quarter-hour interval coincides with quarter-hour boundaries. After requesting *current*, you may want to wait until the next quarter-hour period begins and request *previous* to obtain a full report of the prior quarter-hour interval.

```

CC0> dmeas
OBJECT [...gar...]: gar
MODULE ADDRESS: 8
INTERVAL [current, previous: +(current)]: +
<report output>

```

SCREEN 3-94. Prompted Entry: Displaying GAR Measurements

```

CC0> dmeas gar 8 current
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dmeas gar 8 current
  GAR MEASUREMENTS
MODULE ADDRESS: 8      <yy-mm-dd> <hh:mm> ----> <hh:mm>

          CPU          CPU          BUFFER  BUFFER  BP
          UTIL          PEAK        UTIL    PEAK    PARITY
          UTIL          UTIL        UTIL    UTIL    ERROR
          31%          45%          49%     51%     3

<--- POST RESOLUTION (ingress) ----> <--- PRE-RESOLUTION (egress) ---->
L2_PDU          L3_PDUs          L2_PDU          L3_PDUs
CLNS
SEGMENTS
41730          5000          63120          7000

*** FOR ADDITIONAL ON-DEMAND MEASUREMENTS USE STARKEEPER II NMS
CC0>

```

SCREEN 3-95. One-line Entry/Output: Displaying GAR Measurements for the Current Interval

Report Fields

This section explains report fields shown in the output of **dmeas gar**.

BUFFER PEAK UTIL

The 5-minute peak utilization value for the data transport buffer within the reported interval. Only the egress side port is measured (**FROM NODE**) .

BUFFER UTIL

The average utilization of the data transport buffer within the reported interval. Only the egress side port (**FROM NODE**) is measured.

BP PARITY ERROR

The number of times that an egress CRC error is detected within the measurement interval reported.

CPU PEAK UTIL

The 5-minute peak utilization value for the CPU within the reported interval.

CPU UTIL

The average utilization of the CPU within the reported interval.

L2_PDU CLNS SEGMENTS

The line segment count of the SMDS connectionless traffic. The segment count is given for the receive and transmit (**"RECEIVED/XMITTED"**) directions for the reported interval.

L3_PDUs

An L3_PDU (Level 3 Protocol Data Unit) is a unit of information passed between peer level 3 entities. This number represents the count of the variable-length L3_PDUs transferred at the ICI. The receive and transmit (**"RECEIVED/XMITTED"**) values are reported separately.

MODULE ADDRESS

The node slot number of the module for which measurements are being reported.

dstat gar (BNS-2000 only)

The **dstat gar** command enables you to display the status of a GAR module.

All hardware module data output during an iteration of **dstat gar** is displayed as well as on-board software information.

The generation of status packet information is contingent on the module mode switch:

- When a GAR module is first installed in a Series M2 Shelf and its mode switch is in the ENABL (enable) position (the normal operating mode), it does not generate any status packets until it completes its power-up self-test.
- When the GAR module mode switch is in the DIAG (diagnose) or DISAB (disable) position, the module does not generate any status packets.
- When a GAR module is reset or an attempt is made to restore a GAR module to service after its mode switch is toggled from ENABL to DIAG, it stops generating status packets.

Syntax

You can input **dstat gar** in prompted or one-line entry. The defaults are shown in parentheses.

```
CC0> dstat
OBJECTS [...gar...]: gar
MODULE ADDRESS:
DETAIL [low, high: +(low)]:
```

Parameters

This section explains parameters used in the **dstat gar** command prompting sequence that differ from those used in **enter gar**. Refer to Syntax for the prompting sequence, system, defaults, and parameter options.

MODULE ADDRESS

A number identifying the slot address that the module occupies. Only a single address can be entered with this command.

DETAIL

Specifies if the command output shows a limited amount of information (*low* detail) or more (*high* detail). The default is *low* detail.

dstat gar

```
CC0> dstat
OBJECTS [...gar...]: gar
MODULE ADDRESS: 8
DETAIL [low,high:+(low)]: high
<report output>
CC0>
```

SCREEN 3-96. Prompted Entry: Displaying High Detail GAR Module Status

```
CC0> dstat gar 8 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat gar 8 high
***** MODULE 8 *****
MODULE TYPE      SERVICE STATE  HARDWARE ERROR COUNT  SERIAL NUMBER
gar              in service    3                      2450
LAST HARDWARE ALARM
Module was reset  <yy-mm-dd> <hh:mm:ss>
LAST SOFTWARE ALARM
none
ONLINE  ENABLED  SELFTEST
yes     yes      pass
IO BOARD  IOB TEST  LOOPBK MODE
present   pass     no
----- HIGH DETAIL -----
MODULE  FIFO  FM NODE  FM NODE  SANITY
RESET   RESET  PARITY   OVERFLO  ERROR
1        0      0         0        0
EXPECT  FULL   EMPTY
TYPE    PACKETS PACKETS
gar     913    2
ACTUAL  ACTUAL  ACTUAL  ACTUAL  EXPECT  EXPECT  EXPECT  EXPECT
STAT1   STAT2   STAT3   STAT4   STAT1   STAT2   STAT3   STAT4
0       160   13      34      0       160    13      34
RANGE   BAD
ERRORS  SEGMENTS
0       0
CC0>
```

SCREEN 3-97. One-line Entry/Output: Displaying High Detail GAR Module Status

Report Fields

References to alarms in the following paragraphs refer to alarm messages in the *Data Networking Products Messages Reference*.

ACTUAL STAT1

The actual value of the first hardware status byte of the specified module's most currently received status packet. In some cases, the actual and expected values of **STAT1** differ.

ACTUAL STAT2

The actual value of the second software status byte of the most currently received status packet for the specified module. In some cases, the actual and expected values of **STAT2** differ. The processor number changes in each status packet.

ACTUAL STAT3

The actual value of the third hardware status byte of the specified module's most currently received status packet. In some cases, the actual and expected values of **STAT3** differ.

ACTUAL STAT4

The actual value of the fourth hardware status byte of the most currently received status packet for the specified module. In some cases, the actual and expected values of **STAT4** differ.

BAD SEGMENTS

The count of segments transmitted by the module on a channel that is beyond the limit configured for the module. Bad segments counts might be attributed to a defective module that is corrupting the address field of the segments or to a channel configuration mismatch on the two sides of the trunk. To determine if the module is defective, run module diagnostics; to determine if a configuration mismatch has occurred, review the module configuration.

EMPTY PACKETS

The number of empty status packets received. Empty packets are received when a module is not physically present in the specified shelf slot. See **EMPTY SLOT** alarm.

ENABLED

Indicates whether or not (*yes* or *no*) the module mode switch is enabled. The value of this field is determined only from status information. See **MODE SWITCH NOT ENABLED** alarm.

EXPECT STAT1

The expected status of the first hardware status byte for the module.

EXPECT STAT2

The expected status of the second software status byte for the module.

EXPECT STAT3

The expected value of the third hardware status byte for the module.

EXPECT STAT4

The expected value of the fourth hardware status byte for the module.

Report Fields *(continued)*

EXPECT TYPE

The expected hardware type of the module in the shelf slot. For in-service modules, the value of this field is dependent only on information the administrator enters into the database. For out-of-service modules, no status packets are generated.

FIFO RESET

The number of first-in, first-out (FIFO) synchronization problems (hardware problems) on the module. See **FIFO RESET** alarm.

FM NODE OVERFLO

The measure of any imbalance between the rate at which information arrives at a module and the rate at which the subscriber equipment processes that information. Overflow errors occur during typical operation and do not necessarily indicate a problem. See **FROM BUS OVERFLOW** alarm.

FM NODE PARITY

The number of packets going to or coming from the node that had parity errors.

FULL PACKETS

The number of status packets containing data that the Control Computer has received. Full packets are received only when a module is physically present in the specified shelf slot.

HARDWARE ERROR COUNT

An approximate number summarizing module errors detected since its last reboot (that is, error counts in other fields). A count of 3 or 4 indicates a normal level of error. Higher counts usually indicate a problem.

IO BOARD

The status of the module I/O board is *present*, *absent*, or *invalid*.

IOB TEST

The status of the I/O board according to the module self-test. Status is reported as *pass* if the I/O board has passed the self-test; *fail* if the I/O board has failed the self-test; *n/a* if the I/O board is absent or not the valid type; or *not done* if the I/O board is installed after the module self-test is run. The I/O board self-test is run during power-up and when the module is reset or restored to service.

LAST HARDWARE ALARM

The module's last hardware alarm. This information, which is based on status packet data, is not stored across Control Computer reboots.

LAST SOFTWARE ALARM

The module's last alarm that it issued by itself. This information is not stored across module or Control Computer reboots. See **MODULE WAS RESET** alarm.

LOOPBK MODE

Indicates whether (*yes* or *no*) any module ports are in loopback mode or whether this information is unavailable (*UA*).

Report Fields *(continued)***MODULE TYPE**

Indicates the module type.

SELFTEST

The status of the module self-test. Status is reported as *pass* if the module has passed the self-test; *fail* if the module has failed the self-test; *n/a* if the module is absent or not the valid type. The module self-test is run during power-up and when the module is reset or restored to service.

SERIAL NUMBER

The unique factory-encoded number for each module accessing the backplane. Maintaining records with these numbers can help track circuit pack vintages.

SERVICE STATE

The current module state. When a module is put into service via **restore**, this field is set to *in service*. When a module is taken out of service via **remove**, this field is set to *oos* (manual). If the alarm system takes a module out of service, when it detects a problem, this field is set to *oos* (auto, fault).

enter gar

enter gar (BNS-2000 only)

The **enter gar** command enables you to enter GAR module information into the database. You can enter a maximum of eight GARs and you can enter multiple GARs at one time.

Syntax

You can input **enter gar** in prompted entry only. The defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...gar...]: gar
MODULE ADDRESS:
DOWNLOAD SERVER [(controller)]:
```

If *DOWNLOAD SERVER* is "controller":

```
SOFTWARE VERSION [(standard)]:
```

If *DOWNLOAD SERVER* is not "controller":

```
SOFTWARE VERSION:
```

```
COMMENT [up to 60 chars double quoted, none: +(none)]:
```

```
MODULE MEASUREMENTS [yes, no: +(no)]:
```

Command loops on *MODULE ADDRESS* prompt.

Parameters

This section contains explanations of parameters used in the **enter gar** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

COMMENT

An optional string of 1 to 60 characters, enclosed in double quotation marks, that contains useful administrative information.

DOWNLOAD SERVER

Specifies the source of the software to be the *controller* or a valid service address for a download server.

MODULE ADDRESS

A number identifying the node slot that the GAR module occupies. A GAR is installed directly into a Series M2 Switch Shelf or Extension Shelf. When entering a GAR module, a single address, a range of addresses (x-y), a series of up to eight addresses (x,y,z), or combinations (x-y,z) can be specified. Note that GAR modules are not permitted to reside in Shelves 6 or 7.

SOFTWARE VERSION

A string of 1 to 14 characters identifying the software version to be downloaded to the module. If **DOWNLOAD SERVER** is *controller*, enter *standard* as the software version filename. If **DOWNLOAD SERVER** is not *controller*, enter the filename containing the appropriate software release to be downloaded from the server.

MODULE MEASUREMENTS

Specifies whether (*yes* or *no*) traffic measurement data is collected and sent to *StarKeeper II* NMS for the specified GAR module.

```
CC0> enter
OBJECTS [...gar...]: gar
MODULE ADDRESS: 8
DOWNLOAD SERVER [+(controller)]: +
SOFTWARE VERSION [+(standard)]: +
COMMENT [up to 60 chars double quoted, none: +(none)]:
"in Rm 303"
MODULE MEASUREMENTS [yes,no:+(no)]: no
MODULE ADDRESS: 
CC0>
```

SCREEN 3-98. Prompted Entry: Entering GAR Information

remove gar

remove gar (BNS-2000 only)

The **remove gar** command enables you to take a GAR module out of service.

Syntax

You can input **remove gar** in prompted or one-line entry.

```
CC0> remove
OBJECTS [...gar...]: gar
MODULE ADDRESS:
```

Parameters

MODULE ADDRESS

A single or set of number(s) identifying the node slot that the GAR module occupies. The number used can take the form of a single address, a list (x,y,z), a range (x-z), or a combination (w,x-z).

```
CC0> remove
OBJECTS [...gar...]: gar
MODULE ADDRESS: 8
CC0>
```

SCREEN 3-99. Prompted Entry: Removing a GAR Module From Service

```
CC0> remove gar 8
```

SCREEN 3-100. One-line Entry: Removing a GAR Module From Service

restore gar (BNS-2000 only)

The **restore gar** command enables you to put a GAR module into service initially or after it has been removed from service.

Syntax

You can input **restore gar** in prompted or one-line entry.

```
CC0> restore
OBJECTS [...gar...]: gar
MODULE ADDRESS:
```

Parameters**MODULE ADDRESS**

A single or set of number(s) identifying the node slot that the GAR module occupies. The number used can take the form of a single address, a list (x,y,z), a range (x-z), or a combination (w,x-z).

```
CC0> restore
OBJECTS [...gar...]: gar
MODULE ADDRESS: 8
CC0>
```

SCREEN 3-101. Prompted Entry: Restoring a GAR Module to Service

```
CC0> restore gar 8
```

SCREEN 3-102. One-line Entry: Restoring a GAR Module to Service

verify gar (BNS-2000 only)

The output of the **verify gar** command enables you to check existing database information for a GAR module or all GAR modules.

Syntax

You can input **verify gar** in prompted or one-line entry. The default value is shown in parentheses.

```
CC0> verify
OBJECTS [...gar...]: gar
MODULE ADDRESS [(all)]:
```

Parameters**MODULE ADDRESS**

The node slot address of the GAR module in a Series M2 Shelf. Either a single module address or the word *all*, meaning every GAR module, can be entered.

```
CC0> verify gar
MODULE ADDRESS [(all)]: 8
<report output>
CC0>
```

SCREEN 3-103. Prompted Entry: Verifying GAR Information

```
CC0> verify gar 8
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M   verify gar 8
MODULE ADDRESS: 8 (shelf 0)
MODULE TYPE: gar
SERVICE STATE: in
DOWNLOAD SERVER: controller
VERSION: standard
COMMENT: in Rm 303
ENABLE MODULE MEASUREMENTS: yes
CC0>
```

SCREEN 3-104. One-line Entry/Output: Verifying GAR Information

Report Fields

This table correlates each report field heading shown in the output of **verify gar** to the parameter for which you are prompted in **enter gar** or **change gar**. The information beneath each report field heading reflects the parameter option specified in either command. *None* indicates that the parameter is not applicable or not used.

Report Field Name	Corresponding Parameter Name
MODULE ADDRESS	MODULE ADDRESS
SERVICE STATE	None; module service state
DOWNLOAD SERVER	DOWNLOAD SERVER
VERSION	SOFTWARE VERSION
COMMENT	COMMENT
ENABLE MODULE MEASUREMENTS	MODULE MEASUREMENTS

System Responses

The following sections contain applicable system responses for the **gar** commands. This section is organized by the key phrase that prefaces each response.

COMMAND FAILED:

Cannot expand mailbox size.

The command processor cannot expand its message queue to receive the requested measurements. If the problem persists, contact your support group.

Error in configuration data. error code = <hex number>

Contact your support group.

Inconsistent configuration.

The hardware must be consistently configured.

Module <addr> is downloading. Try again later.

The specified module is currently downloading software. Retry the command later.

Shelf <number> is not in service, status is not available.

Attempts to obtain a report on this module address failed because it does not exist in the database or out of range of assignable node slot addresses.

Too many transactions.

Not enough storage space exists to hold the measurements requested. If the problem persists, contact your support group.

Unable to obtain data.

Report output cannot be generated because the system cannot gather the necessary information.

DIAGNOSTICS:

Boot tests in progress - . . .

Offline diagnostic boot test: <PASS/FAIL>

Diagnostic download in progress - . . .

Offline module diagnostics in progress - . . .

MAIN BOARD: <PASS/FAIL>

I/O BOARD: <PASS/FAIL>

The previous responses indicate that the named diagnostic is in progress and whether it passed or failed.

Diagnose completed -

The previous response indicates that the diagnostics process completed and the test passed or failed with the condition noted.

Diagnose not completed -

cannot connect the trace channel to the specified <module> port.

command cannot be sent to module <addr>.

download failed (error code: <num>).

DIAGNOSTICS: *(continued)*

download file not found.
error message text
module task did not respond.
module <addr> did not respond to command. Try again later.
module <addr> did not respond to reinitialization. Try again later.
module <addr> has no resources to process command. Try again later.
module <addr> is being downloaded.
module <addr> is too busy to process command. Try again later.
module <addr> malfunction. Check module hardware.
module <addr> must be out-of-service for off-line diagnose.
module <addr> unknown error code: <num>.
unexpected error code from config (error code: <num>).

The previous responses indicate that the diagnostic process could not complete because of one of the reasons stated. The **error message text** response is generated from the diagnostic process resident in the module. It clearly describes the reason for the failure, such as **cannot access timer**.

INPUT ERROR:

Cannot delete GAR module with module <addr> in service. Remove before trying command.

You cannot eliminate module information in the database while the module is in service. Use **remove gar** to take the module out of service. Then retry the command.

Cannot delete GAR module <addr> while downloading.

You cannot eliminate module information in the database while module software is being downloaded.

GAR modules cannot reside in Shelf 6 or 7.

The module address entered is in Shelf 6 or 7. This is not permitted.

Invalid Number: <num>

The number you have input is not valid.

Maximum of <num> GAR modules can be entered.

No more than eight GAR modules can be configured for this network.

Module <addr> is empty.

Module <addr> is not entered.

The module at the specified address has not been entered.

Module Does Not Exist: <addr>

Information has not been entered for the specified module address.

Module <addr> is already configured.

You cannot enter the specified module address because it is already configured in the database.

Module <addr> not configured.

The address specified is not configured.

INPUT ERROR: *(continued)*

Module <addr> has wrong hardware type.

The specified module is not a GAR module.

Module <addr> has wrong hardware type stored in database.

The specified module is not configured as a GAR module in the database.

Module <addr> in service.

Remove before retrying command.

The module must be out of service for the attempted operation to take place. Use the **remove** command to take the specified module out of service.

Module <addr> is downloading.

The module is currently downloading software.

Module <addr> is not a GAR module.

The module at the specified address is not a GAR module.

Module <addr> is not in service.

The module at the specified address has been removed from service.

no switch memory available. Module <addr> cannot be restored.

The Control Computer cannot allocate the amount of Switch memory the module requires. This situation occurs if all Switch memory was allocated or if it was fragmented by removing and restoring several modules. Reboot the node so the memory space can be reallocated in a contiguous block.

Not an Allowed Value: <input>

The value that you have input is not allowed.

Number Expected: <input>

The string input is alphabetic or alphanumeric. Input a numeric string.

Parameter out of Range: <range>

The specified parameter range is invalid.

Range not allowed: <input>

You cannot specify a range of numbers.

Series M2 module cannot reside in a Series M1 Shelf: <addr>

This type of module cannot reside in a Series M1 Shelf.

Slot is reserved: <addr>

The module address specified cannot be used for this type of module.

software inconsistency for slot <addr>.

The versions of software on disk are incompatible.

system too busy to process module <addr>. Try again later.

The system is burdened with other call processing tasks. Retry the command later.

unrecognized error code for module <addr>

The restore failed for unidentifiable reasons.

NO KEY PHRASE:**Cannot abort; <remove/restore> in progress.**

The key was pressed at the system console while the command process could not be terminated.

Data from module <addr> truncated; report will be incomplete.

The module has returned error information that exceeds the buffer size allocated. If the problem persists, contact your support group.

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

Measurement request for <addr> returned error; report will be incomplete.

The module returned an error code instead of the requested measurements. Measurements for the named component(s) will be missing from the report. If the problem persists, contact your support group.

Measurements not available for <addr>.

The named module is not in service.

Measurements not yet available for module <addr>; try again later.

Measurements were requested before the first five-minute interval collection completed. Wait until the module has been in service for at least five minutes before retrying the command.

Module <addr> is already <in/out of> service.

The module at the specified address has already been restored to or removed from service.

Module <addr> is not a GAR module.

The module at the specified address is a module other than a GAR.

Module <addr> state unknown -- system did not respond.

The command might have executed successfully; but the system did not communicate the status to the command processor. Use **dstat module** or **verify dkap** to determine the actual module service state. This error message typically appears during heavy use.

No reply to command.

The reconfiguration could not complete. Contact your support group.

No response from module.

The module is not responding to a request for measurements. If the problem persists, contact your support group.

No resources available to process command.

The system might be busy. Retry the command later.

Not all commands ack'd.

The reconfiguration could not complete. Contact your support group.

NO KEY PHRASE: *(continued)*

Partial changes made. Remove and restore module to synchronize control computer with module.

All changes were not downloaded to module; thus the module and Control Computer are out of sync. Removing and restoring the module will cause data to be redownloaded to module.

Process terminated (DEL received); remaining modules will not be downloaded.

All downloads started will proceed in background.

The key was pressed at the system console.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file could have been removed from the disk.) Contact your local support group.

Status request for <component> <addr> returned error; report will be incomplete.

The module returned status information containing invalid error codes or garbled data.

System too busy to process command; Try again later.

If this message recurs, contact your support group.

Time command returned error; partial report may follow.

The time interval during which measurements were collected cannot be determined. If the problem persists, contact your support group.

Time interval shifted; partial report may follow.

Measurements cannot be collected from one time interval specified. If the problem persists, contact your support group.

The module is being downloaded; report will be incomplete.

The module is out-of-service; report will be incomplete.

Because the module is being downloaded or is out of service; the report will be missing some information. If an incomplete report is generated and some information is unavailable for a specific component, the values for those fields are shown as *N/A*.

Unable to retrieve data from module <addr>.

An error occurred in the interface between the Control Computer and the maintenance process. If the problem persists, contact your support group.

REMOVE/RESTORE FAILED:

cannot assign process to port for module <addr>.

The port is assigned. The Control Computer was unable to spawn a process for the port.

Control computer in slot <addr>.

The module address specified is reserved for the Control Computer.

could not send message to config.

The command processor could not send a message to the configuration process.

REMOVE/RESTORE FAILED: *(continued)***download failed for module <addr>.**

The software download for the specified module failed.

inconsistent database entry for module <addr>. Delete and reenter.

The specified module has been configured inconsistently.

module address <addr> contains a <type> module (<type> expected).

The specified module address contains a module other than that type expected.

module address <addr> contains no module or module running power up self-test.

The specified address contains no module or the module is running a self-test. Please wait 60 seconds for self-test to complete before attempting to restore the module again.

module <addr> is being downloaded.

The specified module is downloading software.

WARNING:**Changes to GAR module parameters will not take effect until the module has been removed and restored.**

The changes made will appear in the output of the **verify** command only after the module has been removed and restored to service.

Comment entry failed.

Comment File Compaction Failed; Comment File Deleted

Comment file too large

Disk out of space

System Too Busy

Unable to access comment file

If the comment entry failed because of insufficient memory space, wait until the system is less busy before trying to reenter a comment.

Download server <addr> is not a valid service address.**Upload server <addr> is not a valid service address.**

The service addresses must be valid and properly defined before entering/changing any module information in the database.

group command set

The following commands are related to the **group** command set.

Administration	Related Objects	
change group	address	lpm
delete group	ai	msm
enter group	aim	sam
verify group	bridge	sdlc8
	bsc3270	slm
	concentrator	trunk
	cpm	tsm8
	dkap	tsmt1
	e2a	ty
	frm	x25
	frm-m2	x25p
	host	x75

change group

The **change group** command enables you to modify certain information regarding a group in the database.

Syntax

You can input **change group** in prompted entry only. The command syntax for **enter group** and **change group** are similar. Unlike **enter group**, **change group** prompts you for a **CURRENT GROUP** and **NEW GROUP** so you can change the name of a group. However, **change group** does not allow you to modify the group **TYPE** or the **DIRECTION** for local groups. You can only change these parameters by deleting all information pertaining to the group with **delete group** and reentering the information with **enter group**.

The defaults for **change group** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

Parameters

This section contains explanations of parameters used in the **change group** prompting sequence that differ from those used in **enter group**.

CURRENT GROUP

A string of 1 to 8 characters that furnishes the current group name to be changed.

NEW GROUP

A string of 1 to 8 characters that furnishes the new group name. The default is the current group name.

```
CC0> change
OBJECTS [...group...]: group
CURRENT GROUP [up to 8 chars]: tyterms
NEW GROUP [up to 8 chars: +(tyterms)]: +
DEVICE OR HOST [up to 8 chars: +(tyhost)]: +
*PASSWORD [up to 8 chars, none: +(none)]: go4it!
*RE-ENTER PASSWORD: go4it!
PASSWORD REQUIRED DURING [select, network_access, both: +(select)]: both

CURRENT GROUP [up to 8 chars]: tycon
NEW GROUP [up to 8 chars: +(tycon)]: +
DEVICE OR HOST [up to 8 chars: +(tyhost)]: +
HOST AUTOBAUD [on, off: +(off)]: on
ROUND ROBIN SERVICE [per_port, per_module, none: +(none)]: +

CURRENT GROUP [up to 8 chars]: ty2way
NEW GROUP [up to 8 chars: +(ty2way)]: +
DEVICE OR HOST [up to 8 chars: +(tyhost)]: +
*PASSWORD [up to 8 chars, none: +(none)]: go4it!
*RE-ENTER PASSWORD: go4it!
PASSWORD REQUIRED DURING [select, network_access, both: +(select)]: both
ROUND ROBIN SERVICE [per_port, per_module, none: +(none)]: +

CURRENT GROUP [up to 8 chars]: trknj
NEW GROUP [up to 8 chars: +(trknj)]: +
ROUND ROBIN SERVICE [per_module, none: +(none)]: per_module

CURRENT GROUP [up to 8 chars]: 
CC0>
```

SCREEN 3-105. Prompted Entry: Changing Group Information

* The password entered at this prompt does not appear on the console screen. It is only an illustration of a password that conforms to password naming conventions.

delete group

The **delete group** command enables you to eliminate information pertaining to a group name from the database. Prior to executing **delete group**, you must change or delete information pertaining to *both* the service address associated with the group and the hardware module. (For example: **delete address** and **delete ty**.)

Syntax

You can input **delete group** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...group...]: group
GROUP:
```

Parameters

Refer to the parameter definition supplied in **enter group**.

```
CC0> delete
OBJECTS [...group...]: group
GROUP: ty2way
CC0>
```

SCREEN 3-106. Prompted Entry: Deleting Group Information

```
CC0> delete group ty2way
```

SCREEN 3-107. One-line Entry: Deleting Group Information

enter group

enter group

The **enter group** command enables you to add information into the database regarding a local or trunk group.

Syntax

You can input **enter group** in prompted entry only. The prompting sequence depends on your response to the **TYPE** and **DIRECTION** prompts. The defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...group...]: group
GROUP [up to 8 chars]:
TYPE [local, trunk: +(local)]:

If TYPE is "local":
    DIRECTION [originate, receive, 2way]:
    DEVICE OR HOST [up to 8 chars: +(standard)]:

If DIRECTION is "originate" or "2way":
    PASSWORD [up to 8 chars, none: +(none)]:
If PASSWORD is not "none":
    RE-ENTER PASSWORD:
    PASSWORD REQUIRED DURING [select, network_access, both: +(select)]:

If DIRECTION is "receive":
    HOST AUTOBAUD [on, off: +(off)]:
    ROUND ROBIN SERVICE [per_port, per_module, none: +(none)]:

    Creating New Host: <host name>

If TYPE is "trunk":
    ROUND ROBIN SERVICE [per_module, none: +(none)]:

Command loops to GROUP prompt.
```

Parameters

This section contains explanations of parameters used in the **enter group** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

DEVICE OR HOST

If **TYPE** is *local*, a string of 1 to 8 characters that specifies the host computer name or device (terminal, modem, control unit) used to designate terminals, modems, or computer call-out ports. If you enter a new host name, the response **Creating New Host: <host name>** appears following the prompt sequence. Use the **host** commands to control the service state of a host and to check current database options.

DIRECTION

If **TYPE** is *local*, specifies whether the group can *originate* or *receive* calls or if the group can do both (*2way*).

Parameters *(continued)***GROUP**

A string of 1 to 8 characters that names a logical bundle of ports/channels on various kinds of modules.

HOST AUTOBAUD

For local receiving groups, specifies if the host transmission speed matching option is to be turned *on* or *off*.

PASSWORD

For local originating groups or two-way groups, a string of 6 to 8 characters specifying the password that terminal users must enter to gain access to the network; or the word *none*, meaning a password does not have to be input to gain access to the network. The password is not echoed and must be reinput for verification.

PASSWORD REQUIRED DURING

If a network access password is designated, specifies if the password test is to occur when the terminal user enters the **select** command in command mode (*select*) or when the terminal user turns on the terminal and/or dials up the network (*network_access*), or when *both* actions occur.

RE-ENTER PASSWORD

The same string of 6 to 8 alphanumeric characters specified at the **PASSWORD** prompt.

ROUND ROBIN SERVICE

Specifies if the type of round-robin service available is *per_port*, *per_module*, or *none* (which is first listed). For trunk groups, round-robin service is provided *per_module* or *none*. For a local receiving group or a two-way group, round-robin service is provided *per_port*, *per_module*, or *none*.

TYPE

Specifies the type of group named as a *local* or *trunk* group.

enter group

```
CC0> enter
OBJECTS [...group...]: group
GROUP [up to 8 chars]: tyterms
TYPE [local, trunk: +(local)]: +
DIRECTION [originate, receive, 2way]: originate
DEVICE OR HOST [up to 8 chars]: tyhost
*PASSWORD [up to 8 chars, none: +(none)]: go4it!
*RE-ENTER PASSWORD: go4it!
PASSWORD REQUIRED DURING [select, network_access, both: +(select)]: +
Creating New Host: tyhost

GROUP [up to 8 chars]: tycon
TYPE [local, trunk: +(local)]: +
DIRECTION [originate, receive, 2way]: receive
DEVICE OR HOST [up to 8 chars]: tyhost
HOST AUTOBAUD [on, off: +(off)]: +
ROUND ROBIN SERVICE [per_port, per_module, none: +(none)]: +

GROUP [up to 8 chars]: ty2way
TYPE [local, trunk: +(local)]: +
DIRECTION [originate, receive, 2way]: 2way
DEVICE OR HOST [up to 8 chars]: tyhost
*PASSWORD [up to 8 chars, none: +(none)]: go4it!
*RE-ENTER PASSWORD: go4it!
PASSWORD REQUIRED DURING [select, network_access, both: +(select)]: +
ROUND ROBIN SERVICE [per_port, per_module, none: +(none)]: +

GROUP [up to 8 chars]: trknj
TYPE [local, trunk: +(local)]: trunk
ROUND ROBIN SERVICE [per_module, none: +(none)]: +

GROUP [up to 8 chars]: 
CC0>
```

SCREEN 3-108. Prompted Entry: Creating Groups for TY Modules

* The password entered at this prompt does not appear on the console screen. It is only an illustration of a password that conforms to password naming conventions.

verify group

The output of the **verify group** command enables you to check the database information pertaining to groups. The information displayed includes modules and/or service addresses associated with the group name, host name, port options, group type, and password information.

Syntax

You can input **verify group** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...group...]: group
GROUP [name, pattern, all: +(all)]:
REPORT TYPE [modules, addresses, both: +(both)]:
```

Parameters

This section contains explanations of parameters used in the **verify group** prompting sequence that differ from those used in **enter group**.

GROUP

A string of 1 to 8 characters that specifies the name of the particular group to be verified, or the word *all* indicating every group, or a particular pattern of characters to be matched.

REPORT TYPE

Specifies whether information should be displayed for *modules*, service *addresses*, or *both* modules and service addresses.

```
CC0> verify
OBJECTS [...group...]: group
GROUP [name, pattern, all: +(all)]: ty*
REPORT TYPE [modules, addresses, both: +(both)]: +
<report output>
```

SCREEN 3-109. Prompted Entry: Verifying Group Information

```

CC0> verify group ty* +
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify group ty* both
  GROUP: tyterms  TYPE: local DEV/HOST: tyhost
  DIRECTION: originate  PASSWORD: yes  selects and network accesses

  NO ADDRESSES ASSIGNED TO THIS GROUP

  NO MODULES ASSIGNED TO THIS GROUP

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify group ty* both
  GROUP: tycon    TYPE: local DEV/HOST: tyhost
  DIRECTION: receive
  HOST AUTOBAUD: on
  ROUND ROBIN SERVICE: none

  NO ADDRESSES ASSIGNED TO THIS GROUP

  NO MODULES ASSIGNED TO THIS GROUP

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify group ty* both
  GROUP: ty2way   TYPE: local DEV/HOST: tyhost
  DIRECTION: 2way  PASSWORD: yes  selects and network accesses
  ROUND ROBIN SERVICE: none

  NO ADDRESSES ASSIGNED TO THIS GROUP

  NO MODULES ASSIGNED TO THIS GROUP

CC0>

```

SCREEN 3-110. One-line Entry/Output: Verifying Group Information (Addresses and Modules Unassigned)

```

CC0> verify group ty* +
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify group ty* both
  GROUP: tyterms  TYPE: local DEV/HOST: tyhost
  DIRECTION: originate  PASSWORD: yes  selects and network accesses

  ADDRESSES:
  MNEMONIC          X.121          LEVEL
  tyhome             9090          local
  tyhome1            9191          local

  MODULE DATA:
  MODULE ADDRESS: 40
  MODULE TYPE: ty12          NCHLS: 13
  SERVICE STATE: out (manual)
  EXTERNAL BAUD RATE: 2400
  PORT  TYPE  DEV_FC  NWK_FC  BAUD  ATTN  ACT  PARITY  SRVC  BILL  VDM
    1  term   xon     none   auto  2brk  c   off   out   off  no
  PORT  HOLD  RBAUD  EC   EPN          CUG PROFILE
    1   on    N/A   y   9292        tycug
  PORT  PDD
    1  tyhome
  PORT  COMMENT
    1  show connectivity

```

SCREEN 3-111. One-line Entry/Output: Verifying Group Information (Addresses and Modules Assigned)

One-line Entry/Output: Verifying Group Information (Addresses and Modules Assigned) *(continued)*

```

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify group ty* both
  GROUP: tycon    TYPE: local DEV/HOST: tyhost
  DIRECTION: receive
  HOST AUTOBAUD: on
  ROUND ROBIN SERVICE: none

  ADDRESSES:
  MNEMONIC          X.121          LEVEL
  tyhome             9090          local
  tyhome1            9191          local

  MODULE DATA:
  MODULE ADDRESS: 40
  MODULE TYPE: ty12          NCHLS: 13
  SERVICE STATE: out (manual)
  EXTERNAL BAUD RATE: 2400

  PORT  TYPE  DEV_FC  NWK_FC  BAUD  ATTN  ACT  PARITY  SRVC  BILL  VDM
    2  cons  none   xon    9600  N/A   N/A  even   out   N/A   yes
  PORT  HOLD  RBAUD  EC   EPN          CUG PROFILE
    2   N/A   N/A   N/A  9494        tycug1
  PORT  PDD
    2
  PORT  COMMENT
    2  show connectivity

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify group ty* both
  GROUP: ty2way    TYPE: local DEV/HOST: tyhost
  DIRECTION: 2way  PASSWORD: yes    selects and network accesses
  ROUND ROBIN SERVICE: none

  ADDRESSES:
  MNEMONIC          X.121          LEVEL
  tyhome             9090          local
  tyhome1            9191          local

  MODULE DATA:
  MODULE ADDRESS: 40
  MODULE TYPE: ty12          NCHLS: 13
  SERVICE STATE: out (manual)
  EXTERNAL BAUD RATE: 2400

  PORT  TYPE  DEV_FC  NWK_FC  BAUD  ATTN  ACT  PARITY  SRVC  BILL  VDM
    3  2way  xon     none   auto  2brk  c   off    out   on    yes
  PORT  HOLD  RBAUD  EC   EPN          CUG PROFILE
    3   on   9600  y   9595        tycug1
  PORT  PDD
    3  tyhome
  PORT  COMMENT
    3  show connectivity
CC0>

```

Report Fields

This table correlates each report field heading shown in the output of **verify group** to the parameter for which you are prompted in **enter group** or **change group**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	Corresponding Parameter Name
DEV/HOST	DEVICE OR HOST
DIRECTION	DIRECTION
GROUP	GROUP
HOST AUTOBAUD	HOST AUTOBAUD
*PASSWORD ROUND ROBIN SERVICE	*PASSWORD ROUND ROBIN SERVICE
TYPE	TYPE

* Shows whether a password was specified, not the actual password entered.

The corresponding parameter names of the report fields shown in the output of group information in which addresses and modules were assigned are supplied in the appropriate module reference documentation and in **verify address**.

System Responses

This section contains system responses for the **group** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Delete group failed.

This response indicates an internal database error.

EXITED PREMATURELY: REASON 2

The command encountered some unexpected situation, which could indicate a Control Computer software failure. It can be caused by a corrupted file system. Retry the command. If the problem persists, reboot from a backup disk. This situation should be reported to your local support group.

The group header is not entered.

This response indicates an internal database error.

Unable to enter password.

This response indicates an internal database error.

INPUT ERROR:

Group Already Exists: <name>

You cannot enter the specified group because it is already entered in the database.

Group Does Not Exist: <name>

Information is not administered in the database for the specified group.

Group <name> cannot be deleted.

You cannot delete the specified group.

The select group may only be an originate group.

If the group name entered is *select*, the only valid entry at the **DIRECTION** prompt is *originate*. This message is displayed if *receive* or *2way* is entered.

The two password entries do not match.

A password entered at the **RE-ENTER PASSWORD** prompt did not match the password entered at the **PASSWORD** prompt. Enter the same password at both prompts.

This group is referenced by a module.

You cannot delete a group being used by a module.

This group is referenced by <level> level <mnemonic/X.121> address <addr>.

You cannot delete a group referenced by the specified address.

NO KEY PHRASE :

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (A file could have been removed from the disk.) Contact your local support group.

Operations Commands: *held-utilsh*

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Operations Commands: *held-utilsh*

The following sections continue the explanation of the operations mode command sets and their conventions, entry methods, and system responses begun in the previous chapter.

The operations commands furnished with the node enable the network administrator to perform assorted operations, administration, and maintenance tasks for node hardware modules and their database elements. An array of system maintenance and utility commands are also available to help manage the Control Computer and network, the file handling system, all the interface modules, and the software.

held command set

The following commands are related to the **held** command set.

Verb/Object	Related Objects
display held	aim bsc3270 group msm sam ty

display held

The **display held** command enables you to display call hold information for all in-service ports on a specified module or those belonging to a specified group. The destination of the held call is given in terms of a module address, channel number, and group name.

You can request **display held** output for supported interface modules, and originating and two-way groups. The report output shows the module address, port number, and group name of the call-initiating module port as well as the held status, slot, port number, tag name, and group name for the call destination module port.

Syntax

You can input **display held** in prompted or one-line entry.

```
CC0> display
OBJECTS [...held...]: held
TYPE [group, module: +(module)]:

If TYPE is "group":
  GROUP NAME [(all)]:

If TYPE is "module":
  MODULE ADDRESS [(all)]:

If "module" is a SAM8:
  BOARD ADDRESS [1: +(1)]:
  PORT NUMBER [1-8: +(1-8)]:

If "module" is SAM64:
  BOARD ADDRESS [1-2: +(1-2)]:
  PORT NUMBER [1-32: +(1-32)]:

If "module" is a SAM504:
  BOARD ADDRESS [1-16: +(1-16)]:

If board address is 1-15:
  PORT NUMBER [1-32: +(1-32)]:

If board address is 16 and module is not SAMML-connected:
  PORT NUMBER [1-24: +(1-24)]:

If board address is 16 and module is SAMML-connected:
  PORT NUMBER [1-19: +(1-19)]:

If "module" is an MSM:
  PORT NUMBER [1-12: +(1-12)]:

If "module" is a TY6:
  PORT NUMBER [1-6: +(1-6)]:

If "module" is a TY12:
  PORT NUMBER [1-12: +(1-12)]:

If "module" is an AIM:
  PORT NUMBER [1-8: +(1-8)]:

If "module" is a BSC3270 (SYNC8):
  PORT NUMBER [1-8: +(1-8)]:
  CU NUMBER [1-32: +(1-32)]:
  TERMINAL NUMBER [1-32: +(1-32)]:
```

Parameters

BOARD ADDRESS

For a SAM, a single number identifying the address of the board. For a SAM8 or a SAM16, the address is *1*; for a SAM64, the address range is *1* to *2*; for a SAM504 the address range is *1* to *16*.

CU NUMBER

For a BSC3270 (SYNC8), a number from *1* to *32* specifying the active control unit for the port.

GROUP NAME

A string of *1* to *8* characters specifying the name of an originating or two-way group for which the report is to be generated. Either a single group name or the word *all*, meaning every group name, can be specified.

MODULE ADDRESS

A number identifying the address of the module or the word *all* indicating every module. If the module is installed directly into the node, the address is *<module>*. Where: *module* is the node slot number the module occupies.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the LIM, which connects the concentrator to the module, occupies; and *module* is the concentrator slot number the module occupies.

For a SAM, a number that specifies the node slot that the trunk module, which provides connectivity to the SAM, occupies. If the trunk module is a SAMML, the appropriate SAMML port number must be appended to the address, separated by a period *<module.port>*. If the module is SAMML-connected with a dual link, the port number must be that of the primary port.

PORT NUMBER

A number identifying the number of a module port. Multiple port number entries are allowed. See Syntax for port number ranges of particular modules.

TERMINAL NUMBER

For a BSC3270 (SYNC8), a number from *1* to *32* specifying the active channel that a physical terminal occupies.

TYPE

Specifies whether the information to be displayed is for a *module* or a *group*.

```
CC0> display
OBJECTS [...held...]: held
TYPE [group, module: +(module)]: +
MODULE ADDRESS [+(all)]: +
<report output>
```

SCREEN 4-1. Prompted Entry: Displaying Module Call Hold Data

```
CC0> display
OBJECTS [...held...]: held
TYPE [group, module: +(module)]: group
GROUP NAME [+(all)]: +
<report output>
```

SCREEN 4-2. Prompted Entry: Displaying Group Call Hold Data

```
CC0> display held module all
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M display held module all

Module 4: out of service due to fault
  MOD   PORT      GROUP   STATUS   MOD   CHNL  TAG   GROUP
  21     4        ty2way  HELD     29    55   t1    hs29_4
  MOD 21  TOTALS: HELD = 1  ACTIVE = 0  DISCON = 0  TOTAL = 1

Module 34: out of service
Module 45: no held calls
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M display held module all

Module 25/4: no held calls
  REPORT TOTALS: HELD = 1  ACTIVE = 0  DISCON = 0  TOTAL = 1
CC0>
```

SCREEN 4-3. One-line Entry/Output: Displaying Module Call Hold Data

```

CC0> display held group all
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  display held group all
Group 2way      : No Held Calls
Group billy     : No Held Calls
Group cpmgrp    : No Held Calls
Group janet     : No Held Calls
Group shrimpg   : No Held Calls
Group sissy     : No Held Calls
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  display held group all
      MOD      PORT      GROUP      STATUS      MOD      CHNL  TAG      GROUP
      21       4         ty2way     HELD         29       55   t1      hs29_4
      GROUP ty2way      TOTALS: HELD = 1   ACTIVE = 0   DISCON = 0   TOTAL = 1
Group tyorig    : No Held Calls
      REPORT TOTALS: HELD = 1   ACTIVE = 0   DISCON = 0   TOTAL = 1
CC0>

```

SCREEN 4-4. One-line Entry/Output: Displaying Group Call Hold Data

Report Fields

BOARD/PORT

For SAMs, the board address and port number of the originator of the call.

CHNL

The destination channel of the call.

GROUP

The group name of the originator of the call (on left side of report) and of the destination (on right side of report).

MOD

The module address of the originating port (on left side of report) and of the destination (on right side of report).

PORT

The port number of the originator of the call.

STATUS

Indicates if the hold status of the call is **ACTIVE** , **DISCON** , or **HELD** .

Report Fields *(continued)***TAG**

A string of 1 to 4 alphanumeric characters, assigned by the user, identifying a call.

A summary line appears at the bottom of the report for each module or group. This line shows the number of calls in the **HELD**, **ACTIVE**, or **DISCON** (disconnected) state and a **TOTAL**: .

ACTIVE

The number of calls in the live state of call processing that are *talking* or *connected*. For a call to be active, it must be held at least once during the current terminal user session; that is, the call must have a tag name already assigned.

DISCON

The number of calls terminated by the far end before the attention session has printed the message: *<tag name> hung up; opposite end disconnected*. Once the attention session (the command mode) has printed this message, the counter for **DISCON** is decremented.

HELD

The number of calls being held with a tag name.

TOTAL

The sum of calls listed in the **HELD**, **ACTIVE**, and **DISCON** states.

System Responses

This section contains system responses for **display held**. It is organized by the key phrase that prefaces the response.

INPUT ERROR:

A dual trunk SAM must be addressed by its primary port number.

The SAMDL is a dual-link to a SAMML-connected SAM: one link, designated as the primary, is connected to an odd-numbered port on a SAMML. The other, designated the secondary link, is connected to a consecutive, even-numbered port on a SAMML. To address any port on a SAMDL, its primary port on the SAMML must be specified.

A port number may not be appended to this module's address.

Only SAMML-connected SAMs use the module address format: *module.port*.

A port number must be appended to SAMML module addresses.

Re-enter the desired address using the format: mod.port.

The module address entered for a SAMML-connected SAM did not include a port number as required. The extended addressing scheme applies to SAMML modules only. Use **verify samml** to display SAMML information.

Call hold is not enabled for module <addr> board <num> port <num>.

The specified module port has not been entered with the call hold option.

Call hold is not enabled for port <num>.

The specified port has not been entered with the call hold option.

Cannot Specify LIM.

The address of the link interface module cannot be specified.

CU <num> is not entered.

No information has been entered for the control unit indicated.

CU <num> is out of service.

The specified control unit is not in service.

Group Name must be either originating or two-way.

The group specified must be an originating or a two-way group. Specify a group to correspond with the service type selected.

Invalid Concentrator Address: <addr>

The concentrator address specified is not valid.

Invalid Group Type

The group specified is not the correct group type. The valid group types for **display held** are originating or two-way.

Module Has Wrong Hardware Type: <addr>

The module at the address specified is not the module type expected.

INPUT ERROR:**Module Is Not In Service: <addr>**

The module address specified is out of service.

Module <addr> board <num> is not entered.

The SAM/SAMML board is not configured.

Module <addr> board <num> is out of service.

The SAM/SAMML board is not in service. Use **restore sam/restore samml** to restore the appropriate SAM/SAMML components.

Module <addr> board <num> port <num> is not entered.

The SAM/SAMML port is not configured.

Module <addr> board <num> port <num> is out of service.

The SAM/SAMML port is not in service. Use **restore sam/restore samml** to restore the appropriate SAM/SAMML components.

Module <addr> is being downloaded.

The specified module is downloading software. Wait a few minutes until the download has completed, then retry the command.

Module <addr> is out of service due to fault.

The module specified has been taken out of service state due to a fault. Use **dstat module** to obtain detailed information about the fault. Use the appropriate **restore <module>** command to put the module back into service, if possible.

Port <num> has not been entered.

The specified port number has not been configured.

Port <num> is out of service.

The port specified is not in service. Use the appropriate **restore** command to put the port back into service.

Terminal <num> call hold is not specified.

Call hold has not been configured for the specified terminal.

Terminal <num> is not entered.

The specified terminal is not configured. Use **enter bsc3270** to add the terminal to the database.

Terminal <num> is out of service.

The specified terminal is not in service. Use **restore bsc3270** to put the terminal back in service.

NO KEY PHRASE:

Too Many Input Parameters.

All was selected as the parameter option and then a port number was specified. The parameter option *all* is the default of *all* modules or *all* originating and two-way groups.

Module <addr>: no held calls.

There are not any held calls for the specified module.

help command set

The following commands are related to the **help** command set.

Verb	Verbs	Related Objects	
help	backup change copy delete diagnose display dmeas dstat enter exit help initialize install move remove restore retire retrieve route schedule set stop switchover sync utilsh verify	active address *ai †aim alarm backout bdtabl †bridge bsc3270 cc circuits comment concentrator connections controller cpackets cpm cpmml disklayout dkap documents eia e2a epn frm *frm-m2 *gar gateway group hardware held host (hardware device) host (software address) logoff lpm measurements module	mpackets msm node oosmods oosports output periodic_bill profile registration release *routes sam samml samtrk save schedule sdlc8 *shelf slm sphaddr *ssm4 standalone standby *str4 switch tape *threshold time *trace *traffic trunk tsm8 tsmt1 ty x25 x25p x28sig x75
* BNS-2000 only.			
† BNS-2000 VCS only.			

help

The **help** command enables you to receive three levels of on-line assistance regarding the operations commands and available documentation.

Syntax

You can input **help** in prompted, partially prompted, or one-line entry. The **help** command does not have any defaults.

For the first level of assistance:

CC0> help

For the second level of assistance for a command:

CC0> help <command verb>

For the second level of assistance for documents:

CC0> help documents

For the third level of assistance for a command:

CC0> help <command verb> <object>

Parameters

This section contains explanations of parameters used in the **help** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

command verb

Specifies the command verb for which a help screen is to be displayed. The command verbs are **backup**, **change**, **copy**, **delete**, **diagnose**, **display**, **dmeas**, **dstat**, **enter**, **exit**, **help**, **initialize**, **install**, **move**, **remove**, **restore**, **retire**, **retrieve**, **route**, **schedule**, **set**, **stop**, **switchover**, **sync**, **utilsh**, and **verify**.

documents

Specifies that the help screen is to display a descriptive list of all *documents* with ordering numbers.

object

Specifies the command object for which a help screen is to be displayed for the specified verb.

```
CC0> help  
<command output>
```

SCREEN 4-5. One-line Entry/Output: Invoking the First Level Help Screen

```
CC0> help change  
<command output>
```

SCREEN 4-6. One-line Entry/Output: Invoking a Second Level Help Screen

```
CC0> help change address  
<command output>
```

SCREEN 4-7. One-line Entry/Output: Invoking a Third Level Help Screen

```
CC0> help document  
<command output>
```

SCREEN 4-8. One-line Entry/Output: Invoking the Document Help Screen**System Responses**

Other than its command output, **help** does not have any associated system responses.

host command set

The following commands are related to the **host** command set.

Administration	Operation	Related Objects
verify host	remove host restore host	address group* module

* This object is used to create a host so it must be entered first.

remove host

The **remove host** command enables you to prevent calls from being made to all service addresses, modules, and/or components associated with the specified host name.

Syntax

You can input **remove host** in prompted or one-line entry.

```
CC0> remove
OBJECTS [...host...]: host
HOST [up to 8 chars]:
```

Parameters

This section contains explanations of parameters used with **remove host**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

HOST

A string of 1 to 8 characters that specifies the host to be removed.

```
CC0> remove
OBJECTS [...host...]: host
HOST [up to 8 chars]: tyhost
CC0>
```

SCREEN 4-9. Prompted Entry: Removing a Host from Service

```
CC0> remove host tyhost
```

SCREEN 4-10. One-line Entry: Removing a Host from Service

restore host

The **restore host** command enables you to put the service addresses, the modules and/or the components associated with a particular host name, back into service. This command is equivalent to restoring service addresses using **restore address** or restoring modules and/or components using the appropriate **restore <module>** command.

You cannot use **restore host** to put out-of-service downloadable modules back into service if the **dstat <module>** command has indicated that the module service state is *oos,auto,fault*. You must use the appropriate **restore <module>** command to return the module to service.

NOTE: You can use **restore host** to put the components of in-service downloadable modules back into service.

You can input **restore host** in prompted or one-line entry.

```
CC0> restore
OBJECTS [...host...]: host
HOST [up to 8 chars]:
```

Parameters

This section contains explanations of parameters used with **restore host**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

HOST

A string of 1 to 8 characters that specifies the host to be restored.

```
CC0> restore
OBJECTS [...host...]: host
HOST [up to 8 chars]: tyhost
CC0>
```

SCREEN 4-11. Prompted Entry: Restoring a Host to Service

```
CC0> restore host tyhost
```

SCREEN 4-12. One-line Entry: Restoring a Host to Service

verify host

The output of the **verify host** command enables you to check database information regarding a single host or all administered hosts. The information displayed provides the names of groups assigned to the specified host, service addresses assigned to these groups, and the address level and the service state of each address.

Syntax

You can input **verify host** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...host...]: host
HOST [name, pattern, all: +(all)]:
```

Parameters

This section contains explanations of parameters used with **verify host**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

HOST

A string of 1 to 8 alphanumeric characters that names a particular host; a pattern of characters to be matched; or the word *all*, meaning every administered host.

```
CC0> verify
OBJECTS [...host...]: host
HOST [name, pattern, all: +(all)]: tyhost
<report output>
```

SCREEN 4-13. Prompted Entry: Verifying Host Information


```
CC0> verify host ty*
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify host tyhost

HOST: tyhost
CURRENT GROUP/ADDRESS ASSIGNMENTS:
GROUP      MNEMONIC      X.121      LEVEL      SERVICE STATE
tyterms    NO ADDRESSES
tycon      kimball          6796      local      out
ty2way     kimball          6796      local      out
```

SCREEN 4-14. One-line Entry/Output: Verifying Host Information

Report Fields

Each report field unique to **verify host** is explained in the following table.

Report Field Name	Explanation
* GROUP	The group or groups to which the host is assigned.
** LEVEL	The address level.
** MNEMONIC	The mnemonic address associated with the group; or, if addresses are not associated with the group, the phrase NO ADDRESSES .
** SERVICE STATE	The service state of the address.
** X.121	The X.121 address associated with the group.

* Refer to the parameter definitions supplied with **enter group**.

** Refer to the parameter definitions supplied with **enter address**.

System Responses

This section contains system responses for the **host** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

No hosts are entered.

Information regarding any host is not entered in the database.

No hosts match <pattern>.

There is not any currently administered host that matches the specified pattern.

INPUT ERROR:

Host Does Not Exist: <name>

The specified host name has not been administered with **enter group**.

This <addr> mnemonic address is not entered.

The specified mnemonic address cannot be removed/restored because it is not administered.

This <addr> X.121 address is not entered.

The specified X.121 address cannot be removed/restored because it is not administered.

REMOVE/RESTORE FAILED:

For addresses:

remove address <level> <addr> failed

Billing did not receive request to remove billing address.

The specified billing address cannot be removed because the command processor could not send a message to the billing process.

remove address <level> <addr> failed

This address is already out of service.

The specified address has already been taken out of service.

restore address local billing failed

Billing did not receive request to restore billing address.

The specified billing address could not be removed because the command could not send a message to the billing process.

restore address <level> <addr> failed

Cannot restore address <addr> without a group assignment.

The specified address cannot be restored to service unless a group has been specified.

restore address <level> <addr> failed

This address <addr> is already in service.

The specified address cannot be restored to service because it already is in service.

REMOVE/RESTORE FAILED: *(continued)*

For modules:

Host <name> is already <in/out of> service.

The previous responses indicate the specified host has already been restored to or removed from service.

no channel sets for host <name> have been <removed/restored>.

no ports for host <name> have been <removed/restored>.

no ports or channel sets for host <name> have been <removed/restored>.

The previous responses indicate which specific ports, channels sets, and/or modules could not be removed or restored.

REMOVE/RESTORE INCOMPLETE:

the following channel sets could not be <removed/restored> <chnlset> <mod>.

the following modules are in the download state: <mods>.

the following modules are not in service <mods>.

the following ports could not be <removed/restored> <mod & port>.

the following ports or channel sets could not be <removed/restored:

<port & mod> <and/or> <chnlset & mod>.

The previous responses indicate the specific port, channel set, and/or module for which the remove/restore operation could not complete.

For SAMs only:

All SAM ports associated with the specified host are <in/out of>service.

The previous response indicates that every SAM port associated with the specified host has already been restored to or removed from service.

REMOVE/RESTORE FAILED:

No SAM ports assigned to this host have been <removed/restored>.

The operation failed because module ports assigned to the specified host could not be removed or restored.

REMOVE/RESTORE INCOMPLETE:

Cannot communicate with the following SAM modules: <mod>.

The following board(s) on module <mod> are not in service <board>.

The following board(s) on module <mod> are not physically present in the SAM cabinet: <board>.

The following board(s) on SAM module <mod> are <not in service/already in service>: <board>.

The following SAM modules are downloading: <mod>.

The following SAM modules are not in service: <mod>.

In the previous responses, the remove/restore operation could not be completed for the specified module/board due to the reason cited.

initialize command set

The following commands are related to the **initialize** command set.

Verb/Object	Related Verbs	Related MRC Command
initialize circuits* initialize controller initialize hardware initialize standalone	stop	set recovery
	sync	

* See the **circuits command set**.

See the **MRC Commands** chapter for additional **initialize** commands.

initialize controller

The **initialize controller** command enables you to initialize and reboot the Control Computer. In addition, **initialize controller** performs an automatic *synchronization* of the database. (Refer to the **sync** command.) During command execution, active calls are not typically interrupted. However, initializing the active Control Computer can result in an attempted switchover to the standby if the MRC **set recovery** command is set to *on*. For related information, see the **stop** command and the MRC **set recovery** command.

NOTE: Unless a billing port has a PDD to billing specified, the billing port drops its connection when the Control Computer is rebooted. If the PDD has been specified, the call is re-established after the warm boot.

Syntax

You can input **initialize controller** in prompted or one-line entry; however, the syntax differs.

For prompted entry:

```
CC0> initialize
OBJECTS [...controller...]: controller
```

For one-line entry:

```
CC0> initialize controller <disk number>
```

Parameters

This section contains explanations of parameters used in the **initialize controller** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

<disk number>

An optional parameter specified during one-line entry only that indicates whether the Control Computer is to be initialized from disk *0* (the active disk, the default) or *1* (the standby disk).

```
CC0> initialize
OBJECTS [...controller...]: controller
<system output>
```

SCREEN 4-15. Prompted Entry: Initializing the Control Computer

```

CC0> initialize controller
*** Trying To Boot From Primary Disk ***

A RECOVERY REBOOT
  Reason: SOFTWARE INITIATED BY ADMINISTRATOR

Active CC
Loading text
Loading data
Clearing bss

Booted from Device: 5/0
Local Memory Size = <number>
Available Memory: <number> End of Supervisor: <number>

               <Product> <Release> <System>
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<any appropriate alarms would appear here>

BOOTING CC0>

```

SCREEN 4-16. One-line Entry/Output: Initializing the Control Computer from the Active Disk*

* The controller mode switch must be in the ENABL position.

initialize hardware

The **initialize hardware** command causes the system to reboot and reset all configured hardware modules. It also consolidates switch channels (cleans up fragmentation of switch memory). Execution of this command interrupts all currently active calls.

NOTE: Use **initialize hardware** *only* when serious hardware problems exist in the node; and before using the command, make sure the controller mode switch is in the ENABL position.

Syntax

You can input **initialize hardware** in prompted or one-line entry.

```
CC0> initialize
OBJECTS [...hardware...]: hardware
```

Parameters

None.

```
CC0> initialize
OBJECTS [...hardware...]: hardware
<system output>
CC0>
```

SCREEN 4-17. Prompted Entry: Initializing the Hardware to Reset All Modules

```

CC0> initialize hardware
*** Trying To Boot From Primary Disk ***

A RECOVERY REBOOT
  Reason: SOFTWARE INITIATED BY ADMINISTRATOR

Active CC
Loading text
Loading data
Clearing bss

Booted from Device: 5/0
Local Memory Size = <number>
Available Memory: <number> End of Supervisor: <number>

               <Product> <Release> <System>
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<any appropriate alarms would appear here>

BOOTING CC0>

```

SCREEN 4-18. One-line Entry/Output: Initializing the Control Computer from the Active Disk*

* The controller mode switch must be in the ENABL position.

initialize standalone

The **initialize standalone** command enables you to initialize and reboot the Control Computer into the standalone utility shell. By default, the **initialize standalone** command reboots on the currently active disk. The command also automatically synchronizes the database; see the **sync** command. During command execution, active calls are not typically interrupted. However, initializing the active Control Computer can result in an attempted switchover to the standby if the MRC **set recovery** command is set to *on*. For related information, see the **stop** command and the MRC **set recovery** command.

NOTE: Unless a billing port has a PDD to billing specified, the billing port drops its connection when the Control Computer is rebooted. If the PDD has been specified, the call is re-established after the warm boot.

Syntax

You can input **initialize standalone** in prompted or one-line entry.

```
CC0> initialize
OBJECTS [...standalone...]: standalone
```

Parameters

None.

```
CC0> initialize
OBJECTS [...standalone...]: standalone
<system output>
```

SCREEN 4-19. Booting the Control Computer to the Standalone Utility Shell

```
CC0> initialize standalone

*** Trying To Boot From Secondary Disk ***

A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR

Active CC
Loading text
Loading data
Clearing bss

Booted from Device: 5/0
Local Memory Size = <number>
Available Memory: <number> End of Supervisor: <number>

WARNING: SYSTEM RUNNING SHELL ON BOTH PORTS A AND B.
DO NOT RUN COMMANDS FROM BOTH PORTS SIMULTANEOUSLY.

Entering the stand-alone shell on PORT A.

MINI-SH: What can I do for you?
UTILITY>
```

SCREEN 4-20. One-line Entry/Output: Booting the Control Computer to the Standalone Utility Shell*

* The controller mode switch must be in the ENABL position.

System Responses

This section contains system responses for the **initialize** command set. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Could not sync the data base; try using the backup command to save it. Use the stop command to force a reboot.

The command processor could not automatically synchronize the database during the initialization process. Try doing a backup to save existing data. To force a system reboot, use the **stop** command.

initialize <value> command failed. A recovery is in progress.

The designated Control Computer could not be reset because a recovery was in progress.

Sync did not complete, stop command forces a reboot.

The software has detected a corrupted, in core copy of the database; the database has not been written to disk.

Trunk reroute in progress.

For session maintenance trunk configurations, the command failed because a trunk reroute was in progress. Wait approximately one minute before retrying the command.

WARNING

SYSTEM RUNNING SHELL ON BOTH PORTS A AND B.

DO NOT RUN COMMANDS FROM BOTH PORTS SIMULTANEOUSLY.

The **initialize standalone** command and, if a database upgrade is required, the **install release** command put both ports A and B into the standalone utility shell. Either port A or port B, but not both port A and port B, can be used to enter standalone utility shell commands. Failure to heed this warning by using both port A and port B could result in a corrupt database.

install command set

The following commands are related to the **install** command set.

Administration	Operations	Related Objects
install backout	change verify	node
	dstat	cc
	install	disklayout release
install disklayout	backup	save
	change verify	node
	copystage	
	copystby	
	dstat	cc
	install	backout release
install registration verify registration	change verify	node
	dstat	cc
		group host tape
install release	backup	active
	change verify	node
	dstat	cc
	install	backout disklayout registration
	retrieve	host save tape

install backout

The **install backout** command enables you to back out of the installation of a newer software build than the current build running on a node. If there are any problems encountered while installing a build with a higher number than the current build, this command returns to the previous release and reboots the Control Computer to the full operational state.

NOTE: Depending on your configuration, disk partitions will be copied. Each copy takes approximately five minutes.

Syntax

You can input **install backout** in prompted or one-line entry.

```
CC0> install
OBJECTS [...backout...]: backout

If dual Control Computers are configured:
  IS AUTOMATIC RECOVERY OFF [no, yes: +(no)]:

If a secondary disk is configured and it does not have the same disk layout as the primary disk:
  UPDATE STANDBY DISK [no, yes: +(no)]:

If the release in the staging partition is older than the active release:
  CLEAR THE DATABASE ARCHIVE [no, yes: +(no)]:
  . . .
  INFO: Backing out from Release <x> Build <x> to Release <y> Build <y>.
  CONTINUE BOOT PROCESS [no, yes: +(no)]:

<system responses>
```

Parameters

This section contains explanations of parameters used with **install backout**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CLEAR THE DATABASE ARCHIVE

If the release in the staging partition is older than the active release, specifies whether (*yes* or *no*) the database archive should be cleared. The older release cannot boot with the database of the newer release. If *no* is specified, the command exits.

CONTINUE BOOT PROCESS

Specifies whether (*yes* or *no*) the boot process should continue.

IS AUTOMATIC RECOVERY OFF

If dual Control Computers are configured, specifies whether (*yes* or *no*) the automatic recovery feature is off. This command exits if *no* is entered. The command relies on an accurate user response because it cannot verify this information.

UPDATE STANDBY DISK

If a secondary disk is configured that does not have the same disk layout as the primary disk, specifies whether (*yes* or *no*) the standby disk should be updated with new data. If *no* is specified, the standby disk is not updated with the new release. If *yes* is specified, the standby disk will match the primary disk after the reboot. Some data might be overwritten.

install disklayout

The **install disklayout** command enables you to update a disk layout when upgrading the release. The disk layout defines where partitions of the disk begin and the number of disk blocks in each partition. If you are upgrading the system via *StarKeeper II* NMS and using the download option from the **NDSWMGMT** menu, or if you are upgrading a node locally with the **loadrel** command, and a new disk layout is needed, the system will instruct you to run the **install disklayout** command.

The command, which is executed via a direct console connection through port A or port M on the MRCM, writes a new disk layout to the active disk, updates a second disk if it is configured, and reboots the node.

NOTE: Depending on your configuration, disk partitions will be copied. Each copy takes approximately five minutes.

Syntax

You can input **install disklayout** in prompted or one-line entry.

```
CC0> install
OBJECTS [...disklayout...]: disklayout
```

If dual Control Computers are configured:

```
IS AUTOMATIC RECOVERY OFF [no, yes: +(no)]:
```

If secondary disk is configured and it does not have the same disk layout as the primary disk:

```
UPDATE STANDBY DISK [no, yes: +(no)]:
```

```
CONTINUE BOOT PROCESS [no, yes: +(no)]:
```

<system responses>

Parameters

This section contains explanations of parameters used with **install disklayout**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CONTINUE BOOT PROCESS

Specifies whether (*yes* or *no*) the boot process should continue.

IS AUTOMATIC RECOVERY OFF

If dual Control Computers are configured, specifies whether (*yes* or *no*) the automatic recovery feature is off. This command exits if *no* is entered. The command relies on an accurate user response because it cannot verify this information.

UPDATE STANDBY DISK

If a secondary disk is configured that does not have the same disk layout as the primary disk, specifies whether (*yes* or *no*) the standby disk should be updated with new data. If *no* is specified, the standby disk is not updated with the new release. If *yes* is specified, the standby disk matches the primary disk after the reboot. Some data might be overwritten.

SCREEN 4-22. One-line Entry/Output: Installing a New Disk Layout on the System Disks

None.

install registration

The **install registration** command enables you to register the node, install node software, and activate feature packages purchased. Input **install registration** from the **CC0>** prompt to obtain the software release number, software build number, and node identifier. Write this information on the feature card and provide it to the Customer Assistance Center (CAC). With this information, the CAC generates the registration key to be input.

NOTE: Before installing the registration key, only a few operations commands—such as **enter node**, **change node**, **verify node**, **delete group**, **restore host**, and **retrieve tape**, can be executed.

This command is also used to install *add-on feature packages*—those packages purchased after the initial purchase and installation of node software and any original feature packages. When using **install registration** to install add-on feature packages, the CAC must be called once again and the activation identifier, which appears on the new feature card, must be specified. A **new** registration key is generated and must be input via **install registration**.

In general, both the activation identifier and the registration key that is subsequently generated are valid for one software release and build (regardless if the release is a major or a point release) or one add-on feature package purchase. A new feature card is supplied with each purchase.

Syntax

You can input **install registration** in prompted or one-line entry. To terminate command execution for any reason, press .

```
CC0> install
OBJECTS [...registration...]: registration
<screen text>

Please Enter Key: key

Installing the <name> feature package.
Confirm [yes, no: +(yes)]:
```

Parameters

This section contains explanations of parameters used in the **install registration** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

Confirm

Specifies whether (*yes* or *no*) the installation of the named feature package should proceed.

Please Enter Key

An supplied alphanumeric string which, when combined with the activation identifier, registers the node, enables node software, and installs appropriate feature packages and add-on feature packages purchased.

```
CC0> install
OBJECTS [...registration...]: registration

<Product> Node Registration Process

Please call 1-800-WE2-CARE to register your <Product> product and
obtain a software registration key which will permit you to continue
the <Product> installation process. Non-USA customers should
contact their supplier.

      Node Identifier: 00001
      Software Release Number: <code>
      Software Build Number: <number>

Please provide your Node Identifier, Software Release Number, Software
Build Number, and any associated Feature Package Activation Identifiers
to the Customer Assistance Center (CAC) Specialist.

Lucent Technologies will provide you with a software registration authorization key
which you will enter at the "Please Enter Key:" prompt.

Please Enter Key: 398e-rmd-actx

Installing the Frame Relay feature package.
Confirm [yes, no: +(yes)]: +
<remainder of prompting sequence>

This node is now registered. Please continue installation procedures.
CC0>
```

SCREEN 4-23. Prompted Entry/Output: Initially Installing Node Software and Feature Packages

CC0> install registration

<Product> **Node Registration Process**

Node Identifier: 00001

Software Release Number: <number>

Software Build Number: <number>

This node is already registered. An authorization key is not required.

However, if you are attempting to install an add-on feature package on this node, call 1-800-WE2-CARE to register the package.

Please provide your Node Identifier, Software Release Number, Software Build Number, and any associated Feature Package Activation Identifiers to the Customer Assistance Center (CAC) Specialist.

Lucent Technologies will provide you with a software registration authorization key which you will enter at the "Please Enter Key:" prompt.

Please Enter Key: wi4m-38-gtke

Installing the Frame Relay feature package.

Confirm [yes, no: +(yes)]: +

The installation of the Frame Relay feature package is complete.

<remainder of prompting sequence>

CC0>

SCREEN 4-24. One-line Entry/Output: Installing Add-on Feature Packages

verify registration

The output of the **verify registration** command enables you to check which software release and feature packages are currently running on the node.

Syntax

You can input **verify registration** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...registration...]: registration
```

Parameters

None.

```
CC0> verify
OBJECTS [...registration...]: registration
<report output>
```

SCREEN 4-25. Prompted Entry: Verifying Registration Information

```
CC0> verify registration
<Product>
Node Identifier: 00001
Software Release Number: <code>
Software Build Number: <number>
Software Registration Key: a2jb-n7-cs39
The following feature packages are installed on this node:
  - Frame Relay
  - SMDS
  - ATM
CC0>
```

SCREEN 4-26. One-line Entry/Output: Verifying Node Software and Feature Package Information

Report Fields

Each report field unique to **verify registration** is defined in the following table.

Report Field Name	Definition
Node Identifier	The unique number that identifies the node.
Software Build Number	The build number of the software currently installed on the system.
Software Registration Key	The supplied alphanumeric string used to register the node, and install node software and feature packages.
Software Release Number	The release number of the software currently installed on the system.
The following feature packages are enabled:	The names of feature packages purchased, registered, and installed.

install release

The **install release** command enables you to prepare the Control Computer disk(s) partitions and reboot the node on a new release or a new (higher number) build of an existing release.

When upgrading a release, if there is a newer release in the staging partition than in the active partition of the disk, the **install release** command will boot the system into the standalone shell so that **dbupgrd** can be executed at the **UTILITY>** prompt.

When upgrading a build to a newer build, if the releases in the active and staging partition are the same, and the build in the staging partition is the same or newer, the **install release** command will boot the system into operations mode and the **CC0>** prompt will appear.

NOTE: Depending on your configuration, disk partitions will be copied. Each copy takes approximately five minutes.

Syntax

You can input **install release** in prompted or one-line entry. To terminate command execution for any reason, press .

```
CC0> install
OBJECTS [...release...]: release
. . .
If a secondary disk is configured and it does not have the
same disk layout as the primary disk:
UPDATE STANDBY DISK [no, yes: +(no)]:
. . .
If dual Control Computers are configured:
IS AUTOMATIC RECOVERY OFF [no, yes: +(no)]:
. . .
If a database does not exist in the backup area of the disk:
PROCEED WITHOUT A DATABASE ARCHIVE [no, yes: +(no)]:
. . .
CONTINUE BOOT PROCESS [no, yes: +(no)]:
<system responses>
```

Parameters

This section contains explanations of parameters used with **install release**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CONTINUE BOOT PROCESS

Specifies whether (*yes* or *no*) the boot process should continue.

IS AUTOMATIC RECOVERY OFF

If dual Control Computers are configured, specifies whether (*yes* or *no*) the automatic recovery feature is off. This command exits if *no* is entered. The command relies on an accurate user response because it cannot verify this information.

Parameters (continued)

PROCEED WITHOUT A DATABASE ARCHIVE

If a database does not exist in the backup area of the disk, specifies whether (*yes* or *no*) the installation of the release should continue without a database archive. If *yes* is specified, a newly installed release boots without a database, which might disrupt service. If the release in the staging partition was previously booted, the database is still there and the release boots with that database.

[illegible]

SCREEN 4-27. Prompted Entry: Installing a New Release Prior to Upgrading the Database

```
CC0> install
OBJECTS [...release...]: release
. . .
INFO: Upgrading from Release <number> Build <number> to Release <number> Build <number>.
CONTINUE BOOT PROCESS [no, yes: +(no)]: yes
. . .
INFO: This reboot will not require a database upgrade.

<system responses>
CC0>
```

SCREEN 4-28. Installing a New Build of a Release and Rebooting the Node**Report Fields**

None.

System Responses

This section contains system responses for the **install** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Cannot access disk.

The disk cannot be access while the command is being executed.

Cannot create process for I/O (<error number>).

The system cannot create a process while the command is being executed.

Cannot open device: <device>, errno=<error number>.

The specified device cannot be opened while running **install backout**.

Cannot read file system.

The file system cannot be read while the command is being executed.

Cannot receive inter-process message.

The system cannot receive an interprocess message while the command is being executed.

Cannot <read/seek/write> disk layout: <device>, errno=<error number>.

Read, seek, and write operations cannot be performed on the specified device while running **install backout**.

Cannot write disk layout staging area.

The disk layout staging area cannot be written to during execution of the command.

Can't read device: <device>, errno=<error number>.

The specified device cannot be read while running **install backout**.

Invalid file system in device: <device name>.

The file system loaded on the specified device is not valid.

stat() failed, errno=<error number>.

While running **install backout**, this response indicates that a failure in opening a disk file has occurred. Call your customer support group.

The active disk layout is invalid.

Call your customer support group.

The alternate disk layout is active.

Enter the utility shell and run the copystage command.

Then enter install disklayout again.

This response occurs while running **install disklayout**. Follow instructions given in the system response.

COMMAND FAILED *(continued)*

The backup area contains a database archive. It must be cleared before continuing.

While running **install backout**, this response indicates that the release is older than the active release or build, so a database archive should not reside in the backup area. You must clear out the backup area.

The backout command must be executed in the stand-alone shell.

The **install backout** command must be run while the system is in the stand-alone utility shell, not the operations utility shell.

The controller must be rebooted before this command can continue.

Enter initialize controller to perform a warm boot.

This response occurs while running the **install** commands. Follow instructions given in the system response.

The copy between partitions failed (<error number>).

The copy process cannot copy data between disk partitions.

The new disk layout file does not contain a valid disk layout.

While running **install disklayout**, the disk layout file exists, but is invalid or corrupted. Load the disk layout again.

The new disk layout file does not exist.

While running **install disklayout**, the file has to be downloaded from *StarKeeper II* NMS using the **DOWNLOAD** option or loaded from the release tape on the Control Computer.

The new disk layout is already installed.

The new disk layout is already active; the **install disklayout** command does not have to be run.

The node must be booted from partition 0 of the disk.

Reboot the node from partition 0.

The reboot call failed, but the node is still ready to reboot.

Enter the initialize controller command to install the new disk layout.

This response occurs while running **install disklayout**. Follow instructions given in the system response.

The reboot call failed, but the node is still ready to reboot. Enter the initialize controller command to continue the upgrade procedure.

This response occurs while running **install release**. Follow instructions given in the system response.

The reboot call failed, but the node is still ready to reboot.

Enter the init standalone command to continue the upgrade procedure.

This response occurs while running **install release**. Follow instructions given in the system response.

COMMAND FAILED *(continued)*

The release in the staging area has not been validated.

If the release was downloaded from *StarKeeper II* NMS, it must be validated from the NMS before **install release** activates it.

The staging area contains a newer build or release than the currently operating release. Enter install release to boot from it.

While running **install backout**, the file system in the staging area of the disk is a newer build or a newer release than the active build or release running on the node. Use the **install release** command to boot the system from the build or release.

The staging area contains an older build or release than the currently operating release. Enter install backout to boot from it.

This response occurs while running **install release**. Follow instructions given in the system response.

There is no file system in the staging area.

While running **install release**, it was determined that the staging area does not contain a file system

INFO:

Copying active partition to the staging partition of the active disk.

While running **install disklayout**, the disk is using the alternate disk layout.

Copying staged partition to the staging partition of the standby disk.

While running **install disklayout**, the new disk layout is being copied to the secondary disk configured for the node.

Copying staged partition to the standby partition of the active disk.

While running **install backout**, the standby partition is updated with the old release before booting.

Installing new disk layout. This reboot will activate it.

If you answer *yes* while running **install disklayout**, the node reboots with the new disk layout.

The active build is the same as the staged build.

While running **install backout**, it was determined that the active and staged build are identical.

The <active/staging> partition contains Release <n> Build <n>.

While running **install backout**, this response indicates the release and build numbers that currently reside in the active or staging partition.

NO KEY PHRASE:

The activation identifier is not valid for this product.

The activation identifier that appears on the feature card is related to a specific product. You might have inadvertently received or may be using a feature card intended for another product.

The activation identifier is not valid for this software release.

The activation identifier that appears on the feature card is related to a previous software release.

Timeout On Input

An entry was not made at the prompt and the system timed-out. Retry the command.

module command set

The following commands are related to the **module** command set.

Administration	Maintenance	Related Objects	
copy module move module verify module	dstat module	ai aim* bridge* bsc3270 concentrator cpm* cpmml dkap e2a* frm frm-m2 gar* lpm msm	sam samml sdlc8 shelf slm* ssm4 str4 switch trunk tsm8 tsmt1* ty* x25 x25p x75

* Status information for this object must be requested with **dstat module**.

copy module

The **copy module** command enables you to duplicate information regarding an out-of-service module from the current module address to a new, unoccupied module address. The information regarding the components connected to the particular module address—that is, its ports—is also duplicated. The information regarding the equipment connected to the particular module address—that is, the boards, ports, or modules in a concentrator—is also duplicated.

Information that is not duplicated with **copy** includes endpoint numbers or ranges, as well as all information pertaining to a module that is downloading or in service. For an in-service module, use **remove** to take the particular module out of service before using **copy module**. Some restrictions include:

- Certain modules cannot have their associated data copied to another module address because the module is a critical module or their associated data is unique:

Module	Reason
AI	With session maintenance configured
Clock	Critical module
Control Computer	Critical module
Switch	Critical module
E2A	Has unique group names
Shelf	Critical module
SLM	Has unique group names
Trunk	With session maintenance configured
X.25	With endpoint numbers configured
X.25P	With endpoint numbers configured
X.75	Its association with X.25/X.25P modules

- BNS-2000 shelf information must be entered in the database before module information can be copied. To copy module information to a new module address, the corresponding shelf number for this module must be added to the database.
- Database space for information regarding each component type is limited. (See **dbaudit**.) For example, if a module exceeds the PDD limit by having more than the allotted number of ports configured with PDDs, it cannot be copied using this command. If the database becomes full, the information designated to be copied to the new module address is deleted and the database is restored to its original state.
- In addition, the new address of a GAR or M2 Trunk module being copied cannot reside on extension shelves 6 or 7.

Syntax

You can input **copy module** in prompted or one-line entry.

```
CC0> copy
OBJECTS [module]: module
CURRENT MODULE ADDRESS:
NEW MODULE ADDRESS:
```

Parameters

This section contains explanations of parameters used with **copy module**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CURRENT MODULE ADDRESS

A set of numbers identifying the address of the module. If the module is installed directly in the node, the address is *<module>*. Where: *module* is the node slot number that the module occupies.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the LIM, which connects the concentrator to the module, occupies; and *module* is the concentrator slot number of the module.

For two-board modules, such as the TRK-T3I, the current module address must be the address of the main (egress) board.

For a SAM, a number that specifies the node slot number of the trunk module to which the SAM is connected. SAMs that are SAMML-connected cannot be copied or moved; however, SAMs that are not SAMML-connected and the SAMML module itself can be copied and moved.

Only a single address entry is allowed; no lists or ranges can be entered.

NEW MODULE ADDRESS

A number identifying the new, unoccupied module address to which information pertaining to the module residing at the **CURRENT MODULE ADDRESS** is to be duplicated.

For two-board modules, such as TRK-T3I, the new module address cannot be 12, 28, 44, or 60. In addition, there must be two consecutive available slot addresses to accommodate the two boards for the new module address selected. In addition, the new address of a GAR or M2 Trunk module being copied cannot be in extension shelves 6 or 7.

```
CC0> copy
OBJECTS [module]: module
CURRENT MODULE ADDRESS: 11
NEW MODULE ADDRESS: 12
Copying module 11 configuration to module address 12.
CC0>
```

SCREEN 4-29. Prompted Entry: Copying Module Information to a New Address

```
CC0> copy module 11 12
```

SCREEN 4-30. One-line Entry: Copying Module Information to a New Address

dstat module

The **dstat module** command enables you to display the status of a hardware module located at a particular address. You can also use **dstat module** to study problems that the alarm system has detected and to discover undetected problems.

For all Data Networking Products, hardware status can be displayed for concentrator modules, interface modules, and the Control Computer (and if configured, its standby). For BNS-2000, the status of the Cabinet Interface Module (CIM) and the Clock/Trunk/Repeater Module (CTRM) can be displayed. For BNS-2000 VCS, the status of the Clock, the Switch, (and if appropriate for the configuration, its standby), and the Repeater can be displayed. However, the **dstat module** command cannot be used to determine the status of the MRC.

The **dstat module** command provides most information that it displays through the monitoring function of the Control Computer. Once every two seconds (nominally), the Control Computer instructs the Switch module to poll each module for status. Each module sends a status packet to the Control Computer, which analyzes and processes the information. The information is tabulated and used as a basis for information supplied by **dstat**. An alarm might also result.

The only information, which is stored on nonvolatile media, that this command provides is that regarding the service state field. This field indicates whether the module is removed, restored, or nonfunctioning. When the Control Computer is booted, status information is initialized to a default value (occasionally arbitrary).

This command supplies two levels of informational detail, low and high. Many fields, especially in the high detail level, have numerical values that are counts of status packets indicating an error. For example, if the **FM NODE PARITY** field shows the value of 5, five status packets indicated a parity problem. There might have been 5, 10, or even 1,000 parity errors; but, they occurred in five status intervals. In general, the intensity of the problem is proportional to the numerical value shown in the field.

When this command is entered for modules without downloadable software (AIM, bridge, CPM, E2A, MSM, SLM, or TY) hardware and software information is output. When this command is entered for modules with downloadable software (AI, BSC3270, concentrator, CPMML/CPMML-HS, DKAP, FRM, FRM-M2, GAR, LPM, SAM/SAMML, SDLC8, Trunk, TSM8, TSM-T1, X.25, X.25P, or X.75) only hardware information is output.

If **dstat** is entered with the specific module name (**dstat frm**), detailed software information for the module is output. Refer to **dstat** sections in the particular module reference manual for additional information.

Syntax

You can input **dstat module** in prompted or one-line entry. If **DETAIL** is not specified in one-line entry, low detail (the default) is automatically displayed.

```
CC0> dstat
OBJECTS [...module...] module
MODULE ADDRESS:
DETAIL [low, high: (+low)]:
```


Parameters

This section explains the parameters used in the **dstat module** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

DETAIL

Specifies if the output is to show a limited amount of information (*low* detail) or more information (*high* detail).

MODULE ADDRESS

A set of numbers identifying the address of the module. If the module is installed directly in the node, the address is *<module>*. Where: *module* is the node slot number that the module occupies.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the link interface module (LIM), which connects the concentrator to the module, occupies; and *module* is the concentrator slot number of the module.

For SAM modules, a number that specifies the node slot that the trunk module, which provides connectivity to the SAM, occupies. If the trunk module is a SAMML, the appropriate SAMML port number must be appended to the address, separated by a period *<module.port>*.

```
CC0> dstat
OBJECTS [...module...]: module
MODULE ADDRESS: 4
DETAIL [low, high: (+low)]: +
<report output>
```

SCREEN 4-31. Prompted Entry: Displaying High Detail Module Status

```
CC0> dstat module 4 high
<report output>
```

SCREEN 4-32. One-line Entry: Displaying High Detail Module Status

NOTE: Since **dstat** report output varies only slightly from module to module, one report output sample (TY module output) is provided to illustrate report appearance. The **dstat module** command can be used to obtain status reports for any module for which a **dstat <module name>** report is not available, such as the AIM, bridge (EBIM/SLIM-B), CPM, E2A, SLM, and TY.

In addition, **dstat module** can be used to obtain report output for those modules critical to all systems.

Report field descriptions have been provided for **all** interface modules and critical modules.

```
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat module 21 high

***** MODULE 21 *****

MODULE TYPE      SERVICE STATE  HARDWARE ERROR COUNT  SERIAL NUMBER
ty12             in service    0                     22981

LAST HARDWARE ALARM
none

ONLINE  ENABLED
yes     yes

----- HIGH DETAIL -----

MODULE  FIFO    FM NODE FM NODE
RESET   RESET    PARITY  OVERFLO
0        0        0        0

SANITY  MISCELL  TO NODE TO NODE
ERROR   ERROR   OVERFLO PARITY
0        0        0        0

EXPECT  FULL    EMPTY  ACTUAL  ACTUAL  EXPECT  EXPECT
TYPE    PACKETS PACKETS STAT1   STAT2   STAT1   STAT2
ty12    6661    0       1       373     1       360

RANGE   BAD
ERRORS  SEGMENTS
0        0

CC0>
```

SCREEN 4-33. Output: TY12 Status

Report Fields

References to alarms in this section refer to alarm messages in the *Data Networking Products Messages Reference*.

ACK NOT RECEIVED

For the CTRM, the number of network acknowledgments not received since the module was restored to service.

ACTUAL STAT1

The actual value of the hardware status byte of the most currently received status packet for the given module. In some cases, the actual and expected values of **STAT1** differ.

ACTUAL STAT2

The actual value of the software status byte of the most currently received status packet for the given module. In some cases, the actual and expected values of **STAT2** differ. For example, TY12 modules encode the processor number in four bits of **STAT2**. The processor number changes in every status packet. When displaying the status of the Switch, this field shows *n/a*.

ACTUAL STAT3

The actual value of the third hardware status byte of the most recently received status packet for the given module. In some cases, the actual and expected values of **STAT3** differ. When displaying the status of the Switch, this field shows the actual value.

ACTUAL STAT4

For certain modules, the status packet contains four hardware status bytes of which the actual value of the fourth hardware status byte is shown. In some cases, the actual and expected values of **STAT4** differ.

ADDRESS TAB-FUL

For bridges, the number of status packets received indicating the MAC address table was full at least once since the last status packet.

AVAIL

For CPMs, shows whether (*yes* or *no*) the module is on-line and administered, the CPM cable is connected to the proper module, and the protocol has been established.

BAD CTRM ACK

For CIM, the number of missing CTRM fiber protocol acknowledgments from the remote end.

BAD PACKETS

When displaying Switch status, the number of packets received with envelope parity errors that the module transmitted on wrong channel and that the Switch detected. To determine if the module is defective, run diagnostics.

BAD SEGMENTS

The number of segments received with envelope parity errors that the module transmitted on wrong channel and that the Switch detected. To determine if the module is defective, run diagnostics.

Report Fields *(continued)***CABLE**

For CPMs, shows the cable status to be *connected* or *disconnected*. If *disconnected*, a problem was detected in the connection, the host is powered down, or the host is executing too many bus reset instructions (CPM-422B only).

CLOCK ERROR

For CTRMs, the number of clock generator failures since the module was restored to service.

CRC ERROR

For CIMs and CTRMs, the number of cyclic redundancy check (CRC) errors that occurred since the module was restored to service.

COMMAND PARITY

A count of bad command packets received. During normal operation, the module should not receive bad command packets. See **COMMAND PACKET PARITY ERROR** alarm.

DIAGNOSE

Indicates that the module is in diagnose mode.

DRAM ERROR

For bridges, the number of status packets received indicating a dynamic random access memory (DRAM) parity error or memory access failure occurred at least once since the last status packet.

DUART CLOCK

For AIMs, the status of the DUART clock is *healthy* or *failed*.

EMPTY PACKETS

The number of empty status packets received which occurs when a module is broken, is not present in the shelf slot, or its mode switch is in the DISAB (disable) position.

ENABLED

Shows a status of *yes* if the module is prepared for operation. Most modules are prepared for operation when their mode switch is put in the ENABL position. However, other modules require additional switches to be put in the correct position. Refer to the appropriate module documentation. See **MODE SWITCH NOT ENABLED** alarm.

EXPECT STAT1

The expected value of the first hardware status byte for the module.

EXPECT STAT2

The expected value of the second software status byte for the module. When displaying the status of the Switch, this field shows *n/a*.

EXPECT STAT3

The expected value of the third hardware status byte for the module. When displaying the status of the Switch, this field shows the expected value.

Report Fields *(continued)*

EXPECT STAT4

For some modules, the expected value of the fourth hardware status byte.

EXPECT TYPE

The expected hardware type of the module in the shelf slot. For in-service modules, this field depends on administrator supplied information. For out-of-service modules, this field is determined by status packet information. See **WRONG MODULE TYPE** alarm.

FIFO RESET

A count of FIFO synchronization problems detected (a hardware problem) on the module.

FIFO TIMING

For the Clock or Repeater, furnishes a count of FIFO timing problems (a hardware problem) detected on the given module. See **FIFO TIMING** alarm.

FIRMWARE VERSION

For AIMs, indicates which firmware version is running on the module.

FM NODE OVERFLO

A measure of any imbalance between the rate at which information arrives at a module and the rate at which the subscriber processes that information. (Overflow errors can occur during normal operation and do not necessarily indicate a problem. See **FROM BUS OVERFLOW** alarm.)

FM NODE PARITY

The number of packets/segments transmitted to the module having parity errors. See **FROM BUS PARITY ERROR** alarm.

FULL PACKETS

The number of full status packets received which occurs when a module is present in the slot.

HARDWARE ERROR COUNT

An approximate sum of module errors detected since the last reboot. Counts of three or four are typical for a module; higher counts can indicate a problem.

IOB TEST

Indicates if the module's I/O board has passed or failed the self test, or if the test is not applicable because the I/O board is absent or invalid. Also indicates whether the test was not done because the I/O board was installed after the module's self test was performed.

IO BOARD

Indicates whether an I/O board is present in this module, and if it is of the correct type.

Report Fields *(continued)***LAN REC BUF-FUL**

For bridges, the number of status packets received indicating the LAN receive buffer was full at least once since the last status packet.

LAN TRS BUF-FUL

For bridges, the number of status packets received indicating the LAN transmit buffer was full at least once since the last status packet.

LAST HARDWARE ALARM

The last alarm for the module which is based on status packet data. This data is not stored between Control Computer reboots.

LOCAL SYNC ER

For CIMs, the number of times the module lost synchronization with the remote transmitter which might indicate module hardware problems or a damaged fiber link.

LOOPBK CHNL

For AIMs, the port number that is in the loopback mode.

LOOPBACK MODE

For AIMs, indicates whether (*yes* or *no*) an AIM port is in loopback mode.

MANCHES VIOLATE

For CTRMS, the number of status packets received which indicates that at least one Manchester code violation occurred in the data received on the wire or fiber link. A faulty wire or piece of hardware, or an improperly attached fiber link, might cause coding violations.

MICROPR HEALTH

For AIMs, the health of the microprocessors is *normal* or *insane*.

MISCELL ERROR

For TY12, a variety of miscellaneous, internal errors such as ROM checksum errors, unexpected processor traps, and parity errors introduced by the module itself. See **INTERNAL ERROR** alarm.

MODULE RESET

A count of the number of module resets. For some modules, resets occur during normal operation. See **MODULE WAS RESET** alarm.

MODULE TYPE

The type of hardware module residing at the address specified and for which the report has been output. When displaying the status of the Switch, this field reads *switch*. When displaying the status of the Eswitch, this field reads *eswitch*. When displaying the status of the Xswitch, this field reads *xswitch*.

Report Fields *(continued)*

MRC CONNECTED

For CTRMs, shows whether (*yes* or *no*) the MRC is connected to CTRM.

MRC STATUS

For CTRMs, shows the status (*good* or *failed*) of the MRC.

NETWORK

For bridges, the readiness state of the bridge network is shown as *normal* or *not ready*.

NETWORK NOT READY REASON

For bridges, when **NETWORK** indicates *not ready*, this field indicates the reason.

ONLINE

Shows a status of *yes* only if the green LED on the module is *on*. This status is determined by status packet information.

OPERATING STATE

Indicates the current state of a port.

PROTOCOL MISMATCH

For CIMs, the number of module status packets received indicating at least one fiber protocol compatibility error since the last status packet report.

RAM PARITY

A count of parity errors in module read only memory (RAM). See **SWITCH MEMORY PARITY ERROR** alarm.

RANGE ERRORS

Shows the number of packets transmitted by the module on a channel that is beyond the limit for which the module is configured. Range errors might be attributed to a defective module that is corrupting the address field of the segment or a channel configuration mismatch on both sides of the trunk module or CPM. To determine if the module is defective, run module diagnostics; to determine if a configuration mismatch has occurred, review the module configuration.

REMOTE SYNC ERROR

For CIMs, the number status packets received from the module indicating that the remote receiver lost synchronization with the module transmitter. This type of error might indicate hardware problems or a damaged fiber link.

RESETS

The count of sanity or exception errors in the I/O port processor.

Report Fields *(continued)***SANITY ERROR**

See **MODULE MALFUNCTION** alarm.

SELF TEST/SELFTTEST/SELFTST

The result of the on-board hardware diagnostics test. When diagnostics are running, this field reads *waiting*; when diagnostics are completed, this field shows *passed* or *failed*.

SELF-TEST FAIL REASON

When **SELFTST** indicates *failed*, this field shows the reason.

SERIAL NUMBER

The factory-encoded unique number appearing on all modules accessing the backplane (those with a switch and LED). Maintaining records with these numbers helps track vintages of circuit packs.

SERVICE STATE

Shows the current service state of the module to be *in service* (via **restore**), *oos,manual* (out of service via **remove**), *oos,fault,auto* (out of service via the alarm system), *rfs* (ready-for-service), or *downloading*. In addition, configurations with session maintenance show trunk modules to be *oos,rerouted* or *rerouted*; where *oos,rerouted* indicates that the module is out of service and connections on the trunk have been rerouted and *rerouted* indicates that the module is in service, but the trunk has been rerouted.

SERVICE TYPE

Shows the Switch 1 or Switch 2 to be *active* or *standby*. (Either can be *active* or *standby*.) If the Switch is *active*, the **SERVICE STATE** must be *in service*. If the Switch is *standby*, the **SERVICE STATE** can be *in service*; *downloading*; *oos,manual*; or *oos,auto,fault*.

SOFTWARE RESET

The number of times the module software was reset because of an internally detected error (abnormal) or because the module was put into service (normal). See **SOFTWARE RESET** alarm.

STDBY CC STATUS

For CTRM, indicates the status (*good* or *failed*) of the standby Control Computer.

TEST MODE

Indicates if the module is in test mode. In normal operation, the module should not be in the test mode. See **SWITCH IN TEST MODE** alarm.

TO BUS PARITY ERROR

The number of packets received from the CTRM from the CIM with parity errors. A damaged fiber link or hardware problems with the CTRM or CIM can cause this type of error.

Report Fields *(continued)*

TO-FIFO BUF OVERFLOW

The total number of TO FIFO buffer overflows that occurred since the module was restored to service.

TO NODE OVERFLO

For TYs, how many characters arrived from the terminal (or other device) and were dropped because the queue of characters waiting to be sent to the node was full. See **TO BUS OVERFLOW** alarm.

TO NODE PARITY

For TYs, how many characters arrived from the asynchronous device with bad parity. (Parity errors are reported only if the action on parity option has been specified as being checked.) This field tends to implicate the transmission path. See **TO BUS PARITY** alarm.

1/2 FULL TO-BUF

For CIMs, the number of times the TO FIFO buffer high water mark has been reached since the module was restored to service. The mark is set to half full or 4KB.

3/4 FULL FM-BUF

For CIMs, the number of times the FROM FIFO buffer high water mark has been reached since the module was restored to service. The mark is set to three-quarters full or 192KB.

move module

The **move module** command transfers information on an out-of-service concentrator and/or module to a new address and then automatically deletes this information from the old address. All currently configured information for the specified concentrator/module and all connected components are moved.

Some restrictions apply:

- If the database becomes full, the information designated to be moved to the new module address is deleted and the database is restored to its original state.
- Modules that are downloading software or are in service cannot be moved. Use **remove** to take the specified module out of service before using **move**.
- The **move module** command cannot be used to move information regarding an AI module or a trunk module configured for session maintenance.
- BNS-2000 shelf information must be entered in the database before module information can be moved. To move module information to a new module address, the corresponding shelf number for this module must be added to the database.
- In addition, the new address of a GAR or M2 Trunk module being moved cannot be in extension shelves 6 or 7.

Syntax

You can input **move module** in prompted or one-line entry.

```
CC0> move
OBJECTS [module]: module
CURRENT MODULE ADDRESS:
NEW MODULE ADDRESS:
```

Parameters

Refer to the parameter definitions supplied in **copy module**.

```
CC0> move
OBJECTS [module]: module
CURRENT MODULE ADDRESS: 12
NEW MODULE ADDRESS: 13
Moving module 12 configuration to module address 13.
CC0>
```

SCREEN 4-34. Prompted Entry: Moving Module Information to a New Address

```
CC0> move module 12 13
```

SCREEN 4-35. One-line Entry: Moving Module Information to a New Address

verify module

The output of the **verify module** command enables you to check the database contents for a concentrator and/or module residing at a particular address or for all configured modules. When verifying information for all configured modules, data is displayed in ascending numerical order according to module address—that is, data for the module residing in the lowest module address is listed first, followed by data for the module residing in the next higher address.

Syntax

You can input **verify module** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...module...]: module
MODULE ADDRESS [(all)]:
```

Parameters

This section contains explanations of parameters used with **verify module**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

MODULE ADDRESS

A set of numbers identifying the address of the module or the word *all*, meaning every module. If the module is installed directly in the node, the address is *<module>*. Where: *module* is the node slot number that the module occupies.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the LIM, which connects the concentrator to the module, occupies; and *module* is the concentrator slot number of the module.

For SAM modules, a number that specifies the node slot that the trunk module, which provides connectivity to the SAM, occupies. If the trunk module is a SAMML, the appropriate SAMML port number must be appended to the address, separated by a period *<module.port>*. If the module is SAMML-connected with a dual link, the port number must be that of the primary port.

```
CC0> verify
OBJECTS [...module...]: module
MODULE ADDRESS [(all)]: 70
<report output>
```

SCREEN 4-36. Prompted Entry: Verifying a Module Address

```
CC0> verify module 70
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify module 70 (shelf 4)
  MODULE ADDRESS: 70
  MODULE TYPE: ty12                      NCHLS: 13
  SERVICE STATE: out (manual)
  EXTERNAL BAUD RATE: 19200
  PORT  TYPE  DEV_FC  NWK_FC  BAUD  ATTN  ACT  PARITY  SRVC  BILL  VDM  GROUP
    3   term   xon     none   ext   2brk   c   off    out  off  no   o2
    4   term   xon     none   ext   2brk   c   off    out  off  no   o2
  PORT  HOLD  RBAUD  EC   EPN      CUG PROFILE
    3   off   N/A    y   3102-3104  orgty
    4   off   N/A    y   3105-3107  selty
  PORT  PDD
    3   tyhome
    4   tyhome
  PORT  COMMENT
    3   Ent 6/91
    4   Ent 6/91
CC0>
```

SCREEN 4-37. One-line Entry/Output: Verifying the Module Address of a TY12 in BNS-2000 Node

```
CC0> verify module 62
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify module 62
MODULE ADDRESS: 62
MODULE TYPE: swt                                NCHLS: 356
SERVICE STATE: out (rerouted)
LINE SPEED: 1.544M
FRAME TERMINATION LENGTH: 64/256
ENABLE LINK MEASUREMENT: no
CALL SCREENING PROFILE ID: none
COMMENT: swt trunk in 62

SESSION MAINTENANCE DATA:
  REMOTE NODE: ihp                                PRIMARY NODE: ihp
  EXPECTED BANDWIDTH (bps): 1235.2k                EXPECTED BANDWIDTH (%): 80
  ACTIVE CHANNEL SETS: 3                            STANDBY CHANNEL SETS: 1
  BANDWIDTH/ACTIVE CS (bps): 411.7k                STANDBY BANDWIDTH (bps): 308.8k
  FAILURE THRESHOLD (secs): 120                    RECOVERY THRESHOLD (secs): 420

GROUP   CHNLS   CHNL RANGE   CHNL SET
N/A      116      8-123         1
          116     124-239       2
          116     240-355       3

CC0>
```

SCREEN 4-38. One-line Entry/Output: Verifying a Module Address of a Rerouted Session Maintenance Trunk Module in a BNS-2000 VCS Node

Report Fields

Refer to the appropriate **verify <module>** command for report field descriptions.

System Responses

This section contains system responses for the **module** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Cannot abort; <copy/move> in progress.

You pressed at a point where the command could not be terminated.

DATABASE FULL - ENTRY FAILED

The **copy module** command did not execute because space in the database cannot accommodate the information on the new module. Information on the module residing at the **CURRENT MODULE ADDRESS** remains unchanged.

No modules are entered.

Information cannot be verified because the database does not contain any configured modules.

INFO:

128 corresponds to <component> <component location>.

INPUT ERROR: Parameter out of Range.

The logical module address of 128 corresponds to a component residing in a physical node slot.

INPUT ERROR:

A dual trunk SAM must be addressed by its primary port number.

The SAMDL is a dual-link to a SAMML-connected SAM: one link, designated as the primary, is connected to an odd-numbered port on a SAMML. The other, designated the secondary link, is connected to a consecutive, even-numbered port on a SAMML. To address any port on a SAMDL, its primary port on the SAMML must be specified.

A port number may not be appended to this module's address.

The extended addressing scheme applies to SAMML modules only. The module address specified is not a SAMML, thus a port number cannot be appended to the module address. Use **verify samml** to display SAMML information.

Cannot move/copy the second board of a two board module.

The address of the second board of a two-board module cannot be used as the current module address to move/copy the module.

Cannot verify second board of two board module.

The address selected is the address of the second board of a two board module.

Concentrator Does Not Exist: <addr>

No information is entered in the database for the concentrator at the specified address.

Current and new module addresses are the same.

The **NEW MODULE ADDRESS** specified during the attempted **copy module** or **move module** was the same as the **CURRENT MODULE ADDRESS**.

INPUT ERROR: *(continued)*

<GAR/M2 Trunk> modules cannot be moved or copied to Shelf 6 or 7.

It is not permitted for this type of module to reside in shelf 6 or 7.

Invalid Number: <num>

You entered an invalid number (for example: -1).

Module <addr> cannot be the main board address for a two board module.

Module addresses 12, 28, 44, and 60 cannot be used as the new module address to move/copy a two board module.

Module Does Not Exist: <addr>

No information is entered in the database for the specified module address.

Module <addr> cannot be configured on a concentrator.

The specified **CURRENT MODULE ADDRESS** contains a module that can only be configured on a backplane, and the specified **NEW MODULE ADDRESS** is a concentrator slot number. Retry the command with the correct information.

Module <addr> can only be configured on a concentrator.

The specified **CURRENT MODULE ADDRESS** contains a module that can only be configured on a concentrator, and the specified **NEW MODULE ADDRESS** is a backplane slot number. Retry the command with the correct information.

Module <addr> is a Session Maintenance trunk.

Information regarding trunk modules configured for session maintenance cannot be copied or moved.

Module <addr> is already entered.

The specified **NEW MODULE ADDRESS** is already configured in the database.

Module <addr> is downloading.

The specified **CURRENT MODULE ADDRESS** is currently downloading software. Wait until the download is completed, then retry the command.

Module <addr> is in service.

The specified **CURRENT MODULE ADDRESS** is defined in the database as in-service. If this is the correct module address, use remove module to take the module out of service before attempting **copy**. Otherwise, enter the correct module address on the command line, then retry the command.

Module <addr> is not a valid hardware type for this command.

The module residing at the specified address cannot be copied. (For example, the Control Computer, Switch, and the BNS-2000 Shelf cannot be copied or moved.) Enter the correct module address and retry the command.

Module <addr> is not entered.

The specified **CURRENT MODULE ADDRESS** is not configured in the database.

Parameter out of Range: <addr>

The address entered is not within the allowed range.

INPUT ERROR:

SAMML module <addr> is not entered.

A SAMML is not configured or another module is configured at the specified address.

Slot is reserved: <addr>

The specified slot number cannot be used for this type module.

Too Many Parameters: <input>

You can only enter the parameters as specified in the parameter description for the particular command.

NO KEY PHRASE:

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file could have been removed from the disk.) Contact your local support group.

Some or all comment data for current module cannot be deleted.

When you attempted to move the specified module, some or all of the comments for the **CURRENT MODULE ADDRESS** could not be deleted from the database.

Some or all comment data for current module is lost.

When you attempted to copy or move the specified module, some or all of the comments were lost for the **NEW MODULE ADDRESS**. Comments for the **CURRENT MODULE ADDRESS** remain intact.

node command set

The following commands are related to the **node** command set.

Administration	Maintenance	Related Verbs	Related Objects	
change node	dstat node	exit	address	registration
enter node		stop	cc	output
verify node		sync	controller	shelf
			hardware	switch

change node

The **change node** command enables you to modify information in the database for a local node. Once the node is administered with **enter node**, use **change node** if information must be added to or deleted from the database.

Before changing database information to reflect a redundant Switch configuration becoming a single Switch configuration, the standby Switch must be removed from service. See **remove switch**.

Syntax

You can input **change node** in prompted entry only. Except for displaying the present broadcast message and assigning port passwords, the command syntax for **enter node** and **change node** is similar. The defaults for **change node** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt. Only the following portions of the **change node** syntax differ significantly from **enter node**:

```
PRESENT BROADCAST MESSAGE:
...
If a password has not previously been specified and the controller mode switch is in the DIAG position:
  PORT A PASSWORD [6 to 8 chars, none: +(none)]:
If the password is not "none":
  RE-ENTER PASSWORD:
If a password was previously specified:
  PORT A PASSWORD [change, delete, retain: +(retain)]:
If the controller mode switch is in the ENABL position and the password is not to be retained
(loops three times until password is correct):
  CURRENT PORT A PASSWORD:
If the controller mode switch is in the ENABL position and the password is to be changed:
  NEW PORT A PASSWORD:
  RE-ENTER PASSWORD:
  . . .
  REDUNDANT SWITCH [yes, no: +(no)]:
  . . .
If a password has not been specified and controller mode switch is in the DIAG position:
  PORT B PASSWORD [6 to 8 chars, none: +(none)]:
If the password is not "none":
  RE-ENTER PASSWORD:
If a password has already been specified:
  PORT B PASSWORD [change, delete, retain: +(retain)]:
If the controller mode switch is in the ENABL position and the password is not to be retained:
  CURRENT PORT B PASSWORD:
If the controller mode switch is in the ENABL position and the password is to be changed
(loops twice until the passwords are the same):
  NEW PORT B PASSWORD:
  RE-ENTER PASSWORD:
```

Parameters

This section contains explanations of parameters used in the **change node** prompting sequence that differ from those used in **enter node**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CURRENT PORT A/B PASSWORD

If the controller mode switch is in the ENABL position and the current password is to be deleted or changed, a string of 1 to 8 alphanumeric characters specifying the current password for port A and/or port B. This prompt appears as many as three times; if an entry or entries are wrong, then the command terminates and an alarm is generated.

To delete or change the password without first specifying the existing password, put the controller mode switch in the DIAG position and reboot the node. When the **CC0>/CC1>** prompt appears, use **change node**. You are prompted only for a new password.

NEW PORT A/B PASSWORD

If the action is to change the current password, a unique string of 6 to 8 alphanumeric characters specifying the new password for port A and/or port B; or the word *none*, meaning a password is not required for port A and/or port B. Restrictions: the new password must differ from the old password by at least three characters; two characters must be alphabetic and one character must be a number or symbol. The password is not echoed and must be re-entered for verification. The new password takes effect immediately; no reboot is necessary.

PORT A/B PASSWORD

If the controller mode switch is in the DIAG position and a password has not been specified, a unique string of 6 to 8 alphanumeric characters specifying the password for port A and/or port B; or the word *none*, meaning a password is not required for port A and/or port B. Two characters must be alphabetic and one character must be a number or symbol. The password is not echoed and must be re-entered for verification.

Or, if a password has previously been specified, an instruction to *change*, *delete*, or *retain* that password.

PRESENT BROADCAST MESSAGE

Shows the current text (from 1 to 11 lines consisting of 1 to 72 characters each) of the message being broadcast on user terminals. If this broadcast message is to be changed, it is to be specified on the line reading: **LINE 1 OF BROADCAST MSG**. If the default *none* is specified, **LINE 2** through **LINE 11** do not appear.

REDUNDANT SWITCH

Specifies whether (*yes* or *no*) a redundant Switch exists in the system. For BNS-2000 nodes, this prompt appears during an iteration of **change node** only.

RE-ENTER PASSWORD

The same string of 6 to 8 alphanumeric characters specified at the **PORT A PASSWORD** or **PORT B PASSWORD** prompt. This string must be re-entered for verification.

```

CC0> change
OBJECTS [...node...]: node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(Lucent)]: +
LOCAL X.121 DNIC [0000-9999, none: +(2001)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+("Lucent Domestic")]: +
LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(NoNJ)]: +
LOCAL X.121 SERVICE REGION [000-999, none: +(201)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+("New Jersey")]: +
LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(Lincroft)]: +
LOCAL X.121 SERVICE AREA [000-999, none: +(576)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+("Lincroft/Middletown")]: +
LOCAL NODE NAME [up to 8 chars, none: +(Redqueen)]: +
LOCAL NODE PREFIX [0-9, none: +(9)]: +
NATIONAL COUNTRY CODE [1-999: +(1)]: 1
INTERNATIONAL PREFIX [0-9: +(0)]: +

PRESENT BROADCAST MESSAGE:
The Redqueen Node
is running current software on
the development system

LINE 1 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("The Redqueen Node")]: +
+
LINE 2 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("is running current software on")]: +
"is running CURRENT software on"
LINE 3 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("the development system")]: +
+
LINE 4 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+(none)]: +
" "
LINE 5 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]: +
"Notice - Notwithstanding any other lease or license agreement"
LINE 6 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]: +
"that may pertain to, or accompany the delivery of, this"
LINE 7 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]: +
"computer software, the rights of the Government regarding its"
LINE 8 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]: +
"use, reproduction and disclosure are as set forth in"

```

SCREEN 4-39. Prompted Entry: Changing BNS-2000 Local CCM Node Information

Prompted Entry: Changing BNS-2000 Local CCM Node Information *(continued)*

```
LINE 9 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"Government Contract No. GS00K89AGS6465."
LINE 10 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"Unpublished - rights reserved under the"
LINE 11 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"copyright laws of the United States"

CONTROL COMPUTER 0 ADDRESS [13, 14, 29, 30, 45, 46, 61, 62, 77, 78,
93, 94, 109, 110, 125, 126: +(78)]: +

INFO: Control Computer 0 at module address 78 is configured in shelf 4.

CONTROL COMPUTER 1 ADDRESS [93, 94, 109, 110, 125, 126, none: +(110)]: +

INFO: Control Computer 1 at module address 110 is configured in shelf 6.

AUTOMATIC BACKUP [on, off: +(on)]: +
REDUNDANT SWITCH [yes, no: +(yes)]: +
NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]: +
PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]: +
PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]: yes
PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]: +
PORT A PASSWORD [change, delete, retain: +(retain)]: change
* CURRENT PORT A PASSWORD: go4it!
* NEW PORT A PASSWORD: 22cold!
* RE-ENTER PASSWORD: 22cold!
PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]: 30
PORT B USED FOR [console, printer, both (console and printer), nothing:
+(nothing)]: +
ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]: yes
AFTER HOW MANY ERROR PACKETS (PER TWO MINUTES) [2-59: +(50)] +
```

* The password entered at this prompt does not appear on the console screen. The example given merely illustrates a password that conforms to password naming conventions. The controller mode switch is in the ENABL position.

Prompted Entry: Changing BNS-2000 Local CCM Node Information *(continued)*

```
† INFO: The extended routing feature should only be activated
      if the network has been designed to use it.

      ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]: yes
      MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]: 5
      MAXIMUM CLNS HOP COUNT [3-99, none: +(none)]: 5
      SET SMALL WINDOW SIZE [yes, no: +(no)]: +
** FINE TUNE SESSION MAINTENANCE PARAMETERS [yes, no: +(no)]: +

      INFO: Redundant switch will be unavailable until placed in service.
      To place redundant switch in service, enter: restore switch.

† INFO: New node name and port data do not take effect until next system boot.
      To boot, enter: init controller. Changes will be made on the standby
      disk only after a switchover to the standby controller.

CC0>
```

** For all configurations, a *no* response is required. Session maintenance configurations are administered through *StarKeeper II* NMS. Consult the *Session Maintenance Guide* and the *StarKeeper II* NMS documentation.

† The **INFO** message output depends on the options administered (dual disk or dual Control Computer).

```

CC0> change
OBJECTS [...node...] node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(Lucent)]: +
LOCAL X.121 DNIC [0000-9999, none: +(2001)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(Lucent Domestic)]: +
LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(NoNJ)]: +
LOCAL X.121 SERVICE REGION [000-999, none: +(201)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(New Jersey)]:
LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(Lincroft)]: +
LOCAL X.121 SERVICE AREA [000-999, none: +(576)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(Lincroft/Middletown)]: +
LOCAL NODE NAME [up to 8 chars, none: +(Redqueen)]: +
LOCAL NODE PREFIX [0-9, none: +(9)]: +
NATIONAL COUNTRY CODE [1-999: +(1)]: 1
INTERNATIONAL PREFIX [0-9: +(0)]: +
PRESENT BROADCAST MSG:
  The Redqueen Node
  is running current software on
  the development system
LINE 1 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("The Redqueen Node")]:
+
LINE 2 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("is running current software on")]:
"is running CURRENT software on"
LINE 3 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("the development system")]:
+
LINE 4 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+(none)]:
" "
LINE 5 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"Notice - Notwithstanding any other lease or license agreement"
LINE 6 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"that may pertain to, or accompany the delivery of, this"
LINE 7 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"computer software, the rights of the Government regarding its"
LINE 8 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"use, reproduction and disclosure are as set forth in"
LINE 9 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"Government Contract No. GS00K89AGS6465."
LINE 10 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"Unpublished - rights reserved under the"

```

SCREEN 4-40. Prompted Entry: Changing BNS-2000 VCS Local CCM Node Information

Prompted Entry: Changing BNS-2000 VCS Local CCM Node Information *(continued)*

```

LINE 11 OF BROADCAST MSG [up to 72 chars double quoted, none:
+(none)]:
"copyright laws of the United States"
CONTROL COMPUTER 0 ADDRESS [13, 14, 29, 30, 45, 46, 61, 62, 77, 78,
93, 94, 109, 110, 125, 126: +(14)]: +
CONTROL COMPUTER 1 ADDRESS [29, 30, none: +(none)]: +
MRC [yes, no: +(no)]: yes
REDUNDANT SWITCH [yes, no: +(yes)]: +
NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]: +
PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]: +
PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]: yes
PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]: +
PORT A PASSWORD [change, delete, retain: +(retain)]: change
* CURRENT PORT A PASSWORD: go4it!
* NEW PORT A PASSWORD: 22cold!
* RE-ENTER PASSWORD: 22cold!
PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]: 30
PORT B USED FOR [console, printer, both (console and printer), nothing:
+(nothing)]: +
ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]: +
AFTER HOW MANY ERROR PACKETS (PER TWO MINUTES) [2-59: +(50)] +

† INFO: The extended routing feature should only be activated
      if the network has been designed to use it.

ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]: yes
MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]: 5
SET SMALL WINDOW SIZE [yes, no: +(no)]: +
** FINE TUNE SESSION MAINTENANCE PARAMETERS [yes, no: +(no)]: +

† INFO: Redundant switch will be unavailable until placed in service.
      To place redundant switch in service, enter: restore switch.

†INFO: New node name and port data do not take effect until next system boot.
      To boot, enter: init controller. Changes will be made on the inactive
      disk only after booting from that disk.

CC0>

```

* The password entered at this prompt does not appear on the console screen. The example given merely illustrates a password that conforms to password naming conventions. The controller mode switch is in the ENABL position.

** For all configurations, a no response is required. Session maintenance configurations are administered through StarKeeper II NMS. Consult the *Session Maintenance Guide* and *StarKeeper II NMS* documentation.

† The **INFO** message output depends on the options administered (dual disk, dual Control Computer, redundant Switch).


```

CC0> change
OBJECTS [...node...]: node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(Lucent)]: +
LOCAL X.121 DNIC [0000-9999, none: +(2001)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+("Lucent Domestic")]: +
LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(NoNJ)]: +
LOCAL X.121 SERVICE REGION [000-999, none: +(201)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+("New Jersey")]: +
LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(Lincroft)]: +
LOCAL X.121 SERVICE AREA [000-999, none: +(576)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+("Lincroft/Middletown")]: +
LOCAL NODE NAME [up to 8 chars, none: +(Redqueen)]: +
LOCAL NODE PREFIX [0-9, none: +(9)]: +
NATIONAL COUNTRY CODE [1-999: +(1)]: 1
INTERNATIONAL PREFIX [0-9: +(0)]: +

PRESENT BROADCAST MESSAGE:
The Redqueen Node
is running current software on
the development system

LINE 1 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("The Redqueen Node")]: +
+

LINE 2 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("is running current software on")]: +
"is running CURRENT software on"

LINE 3 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("the development system")]: +
+

LINE 4 OF BROADCAST MSG: [up to 72 chars double quoted, none:]: +

CONTROL COMPUTER 0 ADDRESS [14, 30, 46, 62, 78, 94, 110, 126: +(78)]: +
INFO: Control Computer 0 at module address 78 is configured in shelf 4.

CONTROL COMPUTER 1 ADDRESS [94, 110, 126, none: +(110)]: +
INFO: Control Computer 1 at module address 110 is configured in shelf 6.

MRC CONTROLLER SHELF NUMBER [4, 6: +(4)]: +

AUTOMATIC BACKUP [on, off: +(on)]: +
REDUNDANT SWITCH [yes, no: +(yes)]: +
NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]: +

```

SCREEN 4-41. Prompted Entry: Changing BNS-2000 Local ECPU Node Information

Prompted Entry: Changing BNS-2000 Local ECPU Node Information *(continued)*

```

PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]: +
PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]: yes
PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]: +
PORT A PASSWORD [change, delete, retain: +(retain)]: change
* CURRENT PORT A PASSWORD: go4it!
* NEW PORT A PASSWORD: 22cold!
* RE-ENTER PASSWORD: 22cold!
PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]: 30
PORT B USED FOR [console, printer, both (console and printer), nothing:
+(nothing)]: +
ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]: yes
AFTER HOW MANY ERROR PACKETS (PER TWO MINUTES) [2-59: +(50)] +

† INFO: The extended routing feature should only be activated
      if the network has been designed to use it.

ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]: yes
MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]: 5
MAXIMUM CLNS HOP COUNT [3-99, none: +(none)]: 5
SET SMALL WINDOW SIZE [yes, no: +(no)]: +
** FINE TUNE SESSION MAINTENANCE PARAMETERS [yes, no: +(no)]: +

INFO: Redundant switch will be unavailable until placed in service.
      To place redundant switch in service, enter: restore switch.

† INFO: New node name and port data do not take effect until next system boot.
      To boot, enter: init controller. Changes will be made on the standby
      disk only after a switchover to the standby controller.

CC0>

```

* The password entered at this prompt does not appear on the console screen. The example given merely illustrates a password that conforms to password naming conventions. The controller mode switch is in the ENABL position.

** For all configurations, a no response is required. Session maintenance configurations are administered through *StarKeeper II NMS*. Consult the *Session Maintenance Guide* and the *StarKeeper II NMS* documentation.

† The **INFO** message output depends on the options administered (dual disk or dual Control Computer).

```

CC0> change
OBJECTS [...node...] node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(Lucent)]: +
LOCAL X.121 DNIC [0000-9999, none: +(2001)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(Lucent Domestic)]: +
LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(NoNJ)]: +
LOCAL X.121 SERVICE REGION [000-999, none: +(201)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(New Jersey)]: +
LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(Lincroft)]: +
LOCAL X.121 SERVICE AREA [000-999, none: +(576)]: +
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(Lincroft/Middletown)]: +
LOCAL NODE NAME [up to 8 chars, none: +(Redqueen)]: +
LOCAL NODE PREFIX [0-9, none: +(9)]: +
NATIONAL COUNTRY CODE [1-999: +(1)]: 1
INTERNATIONAL PREFIX [0-9: +(0)]: +
PRESENT BROADCAST MSG:
  The Redqueen Node
  is running current software on
  the development system
LINE 1 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("The Redqueen Node")]: +
+
LINE 2 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("is running current software on")]: +
"is running CURRENT software on"
LINE 3 OF BROADCAST MSG: [up to 72 chars double quoted, none:
+("the development system")]: +
+
LINE 4 OF BROADCAST MSG: [up to 72 chars double quoted, none:]: +
CONTROL COMPUTER 0 ADDRESS [14, 30, 46, 62, 78, 94, 110, 126: +(14)]: +
CONTROL COMPUTER 1 ADDRESS [30, none: +(none)]: +
MRC [yes, no: +(no)]: yes
DUAL DISK DRIVES [yes, no: +(no)]: yes
AUTOMATIC BACKUP [on, off: +(on)]: +
REDUNDANT SWITCH [yes, no: +(yes)]: +
NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]: +
PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]: +

```

SCREEN 4-42. Prompted Entry: Changing BNS-2000 VCS Local ECPU Node Information

Prompted Entry: Changing BNS-2000 VCS Local ECPU Node Information *(continued)*

```

PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]: yes
PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]: +
PORT A PASSWORD [change, delete, retain: +(retain)]: change
* CURRENT PORT A PASSWORD: go4it!
* NEW PORT A PASSWORD: 22cold!
* RE-ENTER PASSWORD: 22cold!
PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]: 30
PORT B USED FOR [console, printer, both (console and printer), nothing:
+(nothing)]: +
ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]: +
AFTER HOW MANY ERROR PACKETS (PER TWO MINUTES) [2-59: +(50)] +

† INFO: The extended routing feature should only be activated
      if the network has been designed to use it.

ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]: yes
MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]: 5
SET SMALL WINDOW SIZE [yes, no: +(no)]: +
** FINE TUNE SESSION MAINTENANCE PARAMETERS [yes, no: +(no)]: +

† INFO: Redundant switch will be unavailable until placed in service.
      To place redundant switch in service, enter: restore switch.

†INFO: New node name and port data do not take effect until next system boot.
      To boot, enter: init controller. Changes will be made on the inactive
      disk only after booting from that disk.

CC0>

```

* The password entered at this prompt does not appear on the console screen. The example given merely illustrates a password that conforms to password naming conventions. The controller mode switch is in the ENABL position.

** For all configurations, a no response is required. Session maintenance configurations are administered through StarKeeper II NMS. Consult the *Session Maintenance Guide* and *StarKeeper II NMS* documentation.

† The **INFO** message output depends on the options administered (dual disk, dual Control Computer, redundant Switch).

dstat node

The **dstat node** command enables you to display the status of the local node cabinets and shelves. This command reports information collected through automatic hardware monitoring.

For BNS-2000 VCS and *Datakit II* VCS nodes, the output of **dstat node** depends on node cabinetry:

- Current nodes are housed in modular cabinets that consist of as many as eight shelves numbered 0 to 7. Each shelf has power supplies and fuses. In addition, modular cabinets can have optional reserve power systems (under each stack) that can have battery backup and a set of rectifiers. The power systems are numbered 0 and 1.
- Nodes housed in *Datakit II* VCS Model 2000 hardware have one to two cabinets, numbered 0 and 1, with eight shelves, numbered 0 to 7. Each cabinet has a power unit that contains several power supplies. Each shelf has 5-volt fuses and 12-volt power sensors.

NOTE: Since node cabinetry affects the output of **dstat node**, the output shown in this section is only a sample. Report field definitions are provided for all hardware configurations.

Syntax

You can input **dstat node** in prompted or one-line entry.

```
CC0> dstat
OBJECTS [...node...]: node
```

Parameters

None.

```
CC0> dstat
OBJECTS [...node...] node
<report output>
```

SCREEN 4-43. Prompted Entry: Displaying Node Status

```

CC0> dstat node
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat node
***** STATUS OF SHELVES *****
***** SHELF 0 *****
SHELF COOLING AMBIENT POWER 5-VOLT
TYPE  FANS   TEMP   SUPPLY FUSES
switch good    good    good    good

LAST ALARM
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat node

***** SHELF 1 *****
SHELF COOLING AMBIENT POWER 5-VOLT
TYPE  FANS   TEMP   SUPPLY FUSES
ext   failure good    good    good

LAST ALARM
none

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat node
Shelf 2 is not physically present.
. . .
Shelf 3 is not physically present.
. . .
Shelf 4 is not physically present.

```

SCREEN 4-44. One-line Entry/Output: Displaying BNS-2000 Node Status

dstat node

One-line Entry/Output: Displaying BNS-2000 Node Status *(continued)*

```
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat node

***** SHELF 5 *****
SHELF CABINET COOLING AMBIENT POWER 5-VOLT
TYPE TYPE FANS TEMP SUPPLY FUSES
cntlr Modular good good good good
LAST ALARM
Standby control computer 1 is out-of-service or failed 95-12-31 09:16
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat node
***** SHELF 6 *****
SHELF CABINET COOLING AMBIENT POWER 5-VOLT
TYPE TYPE FANS TEMP SUPPLY FUSES
port Modular good good good good
LAST ALARM
none
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat node
Shelf 7 is not physically present.
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat node
***** STATUS OF NODE *****
LAST ALARM
none
CC0>
```

```

CC0> dstat node
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat node
***** STATUS OF SHELVES *****
----- SHELF 0 -----
COOLING AMBIENT POWER  5-VOLT
FANS     TEMP    SUPPLY FUSES
good     good    good   good
LAST ALARM
none
----- SHELF 1 -----
COOLING AMBIENT POWER  5-VOLT
FANS     TEMP    SUPPLY FUSES
good     good    good   good
LAST ALARM
none
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat node
***** STATUS OF NODE *****
LAST ALARM
none
CC0>

```

SCREEN 4-45. One-line Entry/Output: Displaying BNS-2000 VCS Node Status (Modular Cabinet)

Report Fields

AMBIENT <TEMP/TEMPER>

The temperature measured in and around the given shelf. If the temperature is less than 120° F (48.89° C), the status shown is *good*. If it is greater than 120° F (48.89° C), the status shown is *failure*. If information is not available, the status shown is *(N/A)*.

BATTERY BACK UP

For BNS-2000 nodes, indicates whether (*equipped* or *no*) the node is equipped with a battery backup system.

CABINET TYPE

For BNS-2000 nodes, shows the cabinet type to be *modular*.

CHARGER STATUS

Indicates if the current status of the charge, which maintains the battery charger and connects the batteries to the rectifier during power faults, is *good* or *failure*.

Report Fields *(continued)*

COOLING FANS

The status of the cooling fans in the shelf. If any fan drops below a certain speed, a *failure* status is reported. If all fans are operating normally, a *good* status is reported. If information is not available, the status shown is *(N/A)*.

LAST ALARM

The most recent alarm generated for the given shelf. This information is not stored across Control Computer reboots.

POWER SUPPLY

Indicates a status of *good* or *failure* depending on whether a failed power supply is detected.

RECTIFR STATUS

Indicates if the current status of the rectifiers, which are used to correct the power factor, are *good* or *failure*. If information is not available, the status shown is *(N/A)*.

RUN ON RESERVE

Indicates if (*yes* or *no*) the optional battery backup system is running on reserve power (the batteries). If information is not available, the status shown is *(N/A)*.

SHELF TYPE

For BNS-2000 nodes, shows the shelf type to be a Series M2 Switch Shelf (*switch*), Series M2 Extension Shelf (*ext*), Series M1 Control Shelf (*cntl*), or Series M1 Port Shelf (*port*).

UNIT NUMBER

For BNS-2000 nodes, shows the unit number of the power reserve system to be *0* or *1*.

5-VOLT FUSES

Indicates a status of *good* or *failure* depending on whether a shelf fuse (5-volt) has blown.

5-VOLT TOLER

For *Datakit II* VCS Model 2000 cabinets, indicates if 5-volt power is within (*good*) or not within (*bad*) tolerance. This field does not appear for modular cabinets.

12-VOLT POWER

For *Datakit II* VCS Model 2000 cabinets, indicates if 12-volt power is being supplied properly (*good* versus *failure*). This field does not appear for modular cabinets.

enter node

The **enter node** command enables you to add information to the database regarding a local node.

Syntax

You can input **enter node** in prompted entry only. One to eleven lines of broadcast messages can be entered. You are prompted for an additional line only if you entered a message on the previous line. The defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...node...]: node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(none)]:
LOCAL X.121 DNIC [0000-9999, none: +(none)]:

If LOCAL NETWORK MNEMONIC ADDRESS or LOCAL X.121 DNIC is not "none":
    DIRECTORY ENTRY [up to 30 chars double quoted, none:
        +(none)]:

    LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(none)]:
    LOCAL X.121 SERVICE REGION [000-999, none: +(none)]:

If LOCAL AREA MNEMONIC ADDRESS or LOCAL X.121 SERVICE REGION is not "none":
    DIRECTORY ENTRY [up to 30 chars double quoted, none:
        +(none)]:

    LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(none)]:
    LOCAL X.121 SERVICE AREA [000-999, none: +(none)]:

If LOCAL EXCHANGE MNEMONIC ADDRESS or LOCAL X.121 SERVICE AREA is not "none":
    DIRECTORY ENTRY [up to 30 chars double quoted, none:
        +(none)]:

    LOCAL NODE NAME [up to 8 chars, none: +(none)]:
    LOCAL NODE PREFIX [0-9, none: +(none)]:

    NATIONAL COUNTRY CODE [1-999: +(1)]:
    INTERNATIONAL PREFIX [0-9: +(0)]:

    LINE <x> OF BROADCAST MSG: [up to 72 chars double quoted, none:
        +(none)]:
    Where: x is a number ranging from 1 to 11.

For a CCM node:
    CONTROL COMPUTER 0 ADDRESS [13, 14, 29, 30, 45, 46, 61, 62, 77, 78,
        93, 94, 109, 110, 125, 126: +(14)]:

For an ECPU node:
    CONTROL COMPUTER 0 ADDRESS [14, 30, 46, 62, 78, 94, 110, 126: +(14)]:

    Note: the slot addresses 13 and 14 are not valid on a BNS-2000 node.

If the BNS-2000 VCS/Datakit II VCS CONTROL COMPUTER ADDRESS is not 62 or 126;
where: "x" is a list of slot addresses, all higher than
CONTROL COMPUTER 0 ADDRESS:
    CONTROL COMPUTER 1 ADDRESS [x, none: +(none)]:
```

enter node

Syntax (continued)

For BNS-2000 nodes:

INFO: Control computer <num> at module address <mod addr> is configured in shelf <num>.

For BNS-2000 ECPU nodes, if both CONTROL COMPUTER 0 ADDRESS and CONTROL COMPUTER 1 ADDRESS are specified:

MRC CONTROLLER SHELF NUMBER [x, y: +(x)]:

For BNS-2000 VCS and Datalit II VCS nodes only, if CONTROL COMPUTER 0 ADDRESS is specified

and if CONTROL COMPUTER 1 ADDRESS is "none":

MRC [yes, no: +(no)]:

For ECPU nodes, if CONTROL COMPUTER 0 ADDRESS is specified and if CONTROL COMPUTER 1 ADDRESS is "none":

DUAL DISK DRIVES [yes, no: +(no)]:

If CONTROL COMPUTER 1 ADDRESS is not "none" or DUAL DISK DRIVES is "yes":

AUTOMATIC BACKUP [on, off: +(on)]:

REDUNDANT SWITCH [yes, no: +(no)]:

NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]:

**PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]:**

If PORT A USED FOR does not equal "nothing":

PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]:

**PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]:**

If the controller mode switch is in the DIAG position:

PORT A PASSWORD [6 to 8 chars, none: +(none)]:

If the password is not "none":

RE-ENTER PASSWORD:

PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]:

If PORT A USED FOR is "nothing" or "printer":

PORT B USED FOR [console, both (console and printer): +(both)]:

If PORT A USED FOR is other than "nothing" or "printer":

**PORT B USED FOR [console, printer, both (console and printer), nothing:
+(nothing)]:**

If PORT B USED FOR does not equal "nothing":

PORT B CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]:

**PORT B BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(1200)]:**

If the controller mode switch is in the DIAG position:

PORT B PASSWORD [6 to 8 chars, none: +(none)]:

If the password is not "none":

RE-ENTER PASSWORD:

PORT B EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]:

ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]:

AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]:

AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]:

Syntax (*continued*)

If **AUTOMATICALLY REMOVE TRUNKS WITH ERRORS** is "yes":

AFTER HOW MANY ERROR PACKETS (PER TWO MINUTES) [2-59: +(50)]:

INFO: The extended routing feature should only be activated if the network has been designed to use it.

ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]:

MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]:

For BNS-2000 nodes:

MAXIMUM CLNS HOP COUNT [3-99, none: +(none)]:

SET SMALL WINDOW SIZE [yes, no: +(no)]:

***FINE TUNE SESSION MAINTENANCE PARAMETERS: [yes, no: +(no)]:**

If **LOCAL AREA MNEMONIC ADDRESS** and **LOCAL X.121 SERVICE REGION** are "none":

WARNING: No local area or service region address was entered.

If **LOCAL EXCHANGE MNEMONIC ADDRESS** and **LOCAL X.121 SERVICE AREA** are "none":

WARNING: No local exchange or service area address was entered.

Assorted "INFO" messages appear; see *System Responses*.

Parameters

This section contains explanations of parameters used in the **enter node** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

ACTIVATE BABBLING SIGNAL FEATURE

Specifies whether (*yes* or *no*) an alarm should be printed for each *babbling* port—a port transmitting a sequence of 26 attention signals or DTR transitions to the ON state with no data in between. (One or more babbling ports *might* reduce the call connection rate.) It is useful to enable this option to detect network equipment malfunctions and to avoid call connection rate reductions.

ACTIVATE EXTENDED ROUTING FEATURE

Specifies whether (*yes* or *no*) an alternate route should be invoked if a call fails because the primary route has failed due to a trunk failure.

If extended routing is not carefully planned prior to implementation, this feature could cause call routing loops.

AFTER HOW MANY ERROR PACKETS (PER TWO MINUTES)

If **AUTOMATICALLY REMOVE TRUNKS WITH ERRORS** is *yes*, a number from 2 to 59 designating the number of error packets (per two-minute interval) that should trigger automatic trunk removal.

* For all configurations, a *no* response is required. Session maintenance configurations should be administered through *StarKeeper II* NMS. Consult the *Session Maintenance Guide* and *StarKeeper II* NMS documentation.

enter node

Parameters *(continued)*

AUTOMATIC BACKUP

If **CONTROL COMPUTER 1 ADDRESS** is not *none* or **DUAL DISK DRIVES** is *yes*, specifies if the automatic backup function should be *on* to update the file system on the standby disk with the current database when the active disk is updated. If *off*, an automatic backup is not performed.

AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE

Specifies if (*yes* or *no*) ports that have generated too many sequential signals should automatically be put into the out-of-service fault (*oos fault*) state.

AUTOMATICALLY REMOVE TRUNKS WITH ERRORS

For all trunk modules except the TRK-T3, specifies if (*yes* or *no*) trunks that have generated errors exceeding a particular threshold should automatically be put into the out-of-service fault state. The threshold is specified at the **AFTER HOW MANY ERROR PACKETS (PER TWO MINUTES)** prompt.

CONTROL COMPUTER 0 ADDRESS

Specifies the module address (slot number) of Control Computer 0. (See Syntax for specific numbers.) The Control Computer is administered in the slot or slots determined by the choices made using information in the *Planning Guide*.

CONTROL COMPUTER 1 ADDRESS

For BNS-2000 nodes, specifies the module address (slot number) of Control Computer 1 to be *x*; where: *x* represents all remaining module addresses that are higher than that module address specified for Control Computer 0; or the word *none*, meaning Control Computer 1 is not present.

For BNS-2000 VCS nodes, specifies the module address (slot number) of Control Computer 1. word *none*, meaning Control Computer 1 is not present. (Valid slot numbers are derived from the slot number specified for Control Computer 0. For ECPU nodes, the only valid slot is on the next higher shelf, 16 higher than Control Computer 0. For CCM nodes, the valid slots are the higher slots on this shelf and the next higher one. If Control Computer 0 resides in slot 62 or 126, the prompt for Control Computer 1 is not displayed. See Syntax for specific slot numbers.) To achieve priority status, Control Computer 1 should reside in the highest available slot.

DIRECTORY ENTRY

A 1 to 30 character alphanumeric string that is associated with any preceding address level. This string is displayed to terminal users when directory assistance is requested.

DUAL DISK DRIVES

For ECPU nodes only, if **CONTROL COMPUTER 0 ADDRESS** is specified and **CONTROL COMPUTER 1 ADDRESS** is *none*, specifies if (*yes* or *no*) a second disk drive is to be added to the database.

Parameters *(continued)***FINE TUNE SESSION MAINTENANCE PARAMETERS**

Specifies whether (*yes* or *no*) the default node parameters for the session maintenance feature are to be modified. For all configurations, a *no* response is required. Session maintenance configurations should be administered via *StarKeeper II* NMS. Consult the *Session Maintenance Guide* and *StarKeeper II* NMS documentation.

INTERNATIONAL PREFIX

A number from 0 to 9 that specifies the international prefix that a subscriber is to use when calling a subscriber in another country.

LINE x OF BROADCAST MESSAGE

An optional alphanumeric string of 1 to 72 characters (per 1 to 11 lines), enclosed in quotation marks, that is displayed on user terminals when they connect to the node; or the word *none*, meaning no message. If *none* is specified, the second through the eleventh lines of the broadcast message do not appear.

LOCAL AREA MNEMONIC ADDRESS

A 1 to 8 character alphanumeric string that specifies the mnemonic address of the local area; or the word *none*, meaning no address. The local area mnemonic address cannot resemble an X.121 local service region (SR); it cannot be three digits. The special characters * . = / [] ! and the word *all* cannot be used when naming a local area mnemonic address.

LOCAL EXCHANGE MNEMONIC ADDRESS

A 1 to 8 character alphanumeric string that specifies the mnemonic address of the local exchange; or the word *none*, meaning no address. The local exchange mnemonic address cannot resemble an X.121 local service area; it cannot be three digits. The special characters * . = / [] ! and the word *all* cannot be used when naming a local exchange mnemonic address.

LOCAL NETWORK MNEMONIC ADDRESS

A 1 to 8 character alphanumeric string that specifies the mnemonic address of the local network; or the word *none*, meaning no address. The local network mnemonic address cannot resemble an X.121 Data Network Identification Code (DNIC)—it cannot be four digits. The special characters * . = / [] ! and the word *all* cannot be used when naming a local network.

LOCAL NODE NAME

A 1 to 8 character alphanumeric string specifying the name of the local node; or the word *none*, meaning no name. The special characters * . = / [] ! and the word *all* cannot be used when naming a local node.

Parameters (continued)

LOCAL NODE PREFIX

An optional single digit from 0 to 9 specifying the number that the system is to use when matching the first digit of incoming calls originating from X.25 endpoints having an X.121 international or E.164 address from 6 to 15 digits long; or the word *none*, meaning the local node is not to have a prefix. If the first digit of the local node prefix matches the first digit of the incoming call, the next four digits are expected to be those of a DNIC; so the call can be routed to the destination PDN port. To avoid ambiguity when routing calls, the digit used to represent the local node prefix should be different from the first digit of any DNIC, SR, or SA.

LOCAL X.121 DNIC

A four-digit address ranging from 0000 to 9999 that specifies the local X.121 DNIC; or the word *none*, meaning no address.

LOCAL X.121 SERVICE AREA

A three-digit address ranging from 000 to 999 that specifies the local X.121 service area; or the word *none*, meaning no address.

LOCAL X.121 SERVICE REGION

A three-digit address ranging from 000 to 999 that specifies the local X.121 service region (SR); or the word *none*, meaning no address.

MAXIMUM CLNS HOP COUNT

For BNS-2000 nodes, a number from 3 to 99 that specifies the maximum number of trunks that a PDU can traverse before it is discarded; or the word *none*, meaning the CLNS hop count is not to be activated. When the maximum count for a PDU is reached, an alarm is sent to the node console.

MAXIMUM HOP COUNT PER CALL

A number from 3 to 99 that specifies the maximum number of nodes that a call setup attempt can traverse before it fails; or the word *none*, meaning that the hop count is not to be implemented. The hop count should be longer than the length of the longest path through the network originating at the node being entered. If the longest path is unknown, the hop count should be one less than the maximum number of nodes in the network.

MRC

If **CONTROL COMPUTER 0 ADDRESS** is specified and if **CONTROL COMPUTER 1 ADDRESS** is *none*, specifies whether (yes or no) the Maintenance and Redundancy Control (MRC) function is present in the hardware configuration.

MRC CONTROLLER SHELF NUMBER

For BNS-2000 ECPU nodes only, specifies the number of the shelf in which the MRC function resides. The MRC shelf number depends on the location of the Control Computer: x is the shelf number of Control Computer 0; y is the shelf number of Control Computer 1. The MRC function can reside in the same shelf as Control Computer 0 or Control Computer 1. For CCM nodes, the MRC function is only associated with Control Computer 0.

Parameters *(continued)***NATIONAL COUNTRY CODE**

Specifies a number from 1 to 999 that represents the country code of the nation where the node is located. The national country code (NCC) is not used for call routing.

NODE MONITORED BY STARKEEPER NMS

Specifies whether (*yes* or *no*) the node is to be monitored by *StarKeeper* II NMS. When a node is monitored by *StarKeeper* II NMS (*yes*), measurements data is transmitted to *StarKeeper* II NMS in machine-readable format. When a node is not monitored by *StarKeeper* II NMS (*no*), measurements data appears on the node console in human-readable format.

PORT A/B BAUD RATE

Specifies the speed at which port A and/or port B is to transmit and receive data. The speed set should be compatible with that of any attached device. Before **enter node** and **initialize controller** are executed, the default baud rates of 9600 for Port A and 1200 for Port B are applicable.

PORT A/B CONNECTED TO ALARM ACTIVATOR

Specifies if (*yes* or *no*) port A and/or port B is set to output special signals in order to trigger an alarm activator unit (*aa*).

PORT A/B EXPIRATION INTERVAL (DAYS)

A number from 1 to 365 specifying the number of days in which the password specified for port A and/or port B is to expire; or the word *none* meaning the password is never to expire.

PORT A/B PASSWORD

If the controller mode switch is in the DIAG position, a unique string of 6 to 8 alphanumeric characters specifying the password for port A and/or port B; or the word *none*, meaning a password is not required for port A and/or port B. Two characters must be alphabetic and one character must be a number or symbol. The password is not echoed and must be re-entered for verification. In addition, the parity of the console terminal must be set to *none* so the Control Computer can receive the password. If the parity is not *none*, the password entered at the prompt is treated as an invalid password and the password prompt reappears.

To implement *console security*, the node must be rebooted with the controller mode switch in the ENABL position. After the node is rebooted, you are prompted for a password on the appropriate port.

NOTE: For BNS-2000 VCS nodes, the parity of the console terminal must be set to *none* so the Control Computer can receive the password. If the parity is not set to *none*, the password entered at the prompt is treated as an invalid password and the password prompt appears.

enter node

Parameters *(continued)*

PORT A/B USED FOR

Specifies if port A and/or port B of the Control Computer is to function as an input device (*console*) in which commands can be entered, an output device (*printer*) that receives system messages and alarms, as *both* an input and an output device, or as *nothing*, meaning it is not to be used. If port A is a *printer* or *nothing*, port B can only be set to *console* or *both*, ensuring that at least one port can be used to enter commands. Also see **route output**.

REDUNDANT SWITCH

Specifies whether (*yes* or *no*) a redundant Switch exists.

RE-ENTER PASSWORD

The same string of 6 to 8 alphanumeric characters specified at the **PORT A PASSWORD** or **PORT B PASSWORD** prompt. This string must be re-entered for verification.

SET SMALL WINDOW SIZE

Specifies if (*yes* or *no*) a small window size (the number of packets that a port transmits across the backplane before it expects an acknowledgment) should be set for the node. For nodes in which TY modules and certain asynchronous interface modules are to communicate, the option should be set to *yes*; TYs will then transmit 64 envelopes at a time. If the option is *no*, TYs will transmit 256 envelopes at a time; this size might overload the buffers of the asynchronous interface modules and cause data loss.

```

CC0> enter
OBJECTS [...node...]: node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: Lucent
LOCAL X.121 DNIC [0000-9999, none: +(none)]: 2001
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Lucent Domestic"
LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: NoNJ
LOCAL X.121 SERVICE REGION [000-999, none: +(none)]: 201
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "New Jersey"
LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: Lincroft
LOCAL X.121 SERVICE AREA [000-999, none: +(none)]: 576
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Lincroft/Middletown"
LOCAL NODE NAME [up to 8 chars, none: +(none)]: Redqueen
LOCAL NODE PREFIX [0-9, none: +(none)]: 9
NATIONAL COUNTRY CODE [1-999: +(1)]: +
INTERNATIONAL PREFIX [0-9: +(0)]: +
LINE 1 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"The Redqueen Node"
LINE 2 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"is running current software on"
LINE 3 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"the development system"
LINE 4 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
" "
LINE 5 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"Notice - Notwithstanding any other lease or license agreement"
LINE 6 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"that may pertain to, or accompany the delivery of, this"
LINE 7 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"computer software, the rights of the Government regarding its"
LINE 8 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"use, reproduction and disclosure are as set forth in"
LINE 9 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"Government Contract No. GS00K89AGS6465."
LINE 10 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"Unpublished - rights reserved under the"
LINE 11 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"copyright laws of the United States"
CONTROL COMPUTER 0 ADDRESS [13, 14, 29, 30, 45, 46, 61, 62, 77, 78,
93, 94, 109, 110, 125, 126: +(14)]: 78
INFO: Control Computer 0 at module address 78 is configured in shelf 4.
CONTROL COMPUTER 1 ADDRESS [78, 93, 94, 109, 110, 125, 126, none: +(none)]: 110
INFO: Control Computer 1 at module address 110 is configured in shelf 6.
INFO: Control Shelf 6 will be unavailable until placed in service.
To place control shelf in service, enter: restore shelf.
INFO: Please make sure all connections are made between the controller in
shelf 4 (CC0) and the controller in shelf 6 (CC1).
INFO: MRC control shelf 4 do not take effect until next system boot.
To boot enter: init controller.

```

SCREEN 4-46. Prompted Entry: Entering BNS-2000 Local CCM Node Information

enter node

Prompted Entry: Entering BNS-2000 Local CCM Node Information *(continued)*

```
AUTOMATIC BACKUP [on, off: +(on)]: +
REDUNDANT SWITCH [yes, no: +(no)]: +
NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]: +
PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]: +
PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]: +
PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]: +
* PORT A PASSWORD [6 to 8 chars, none: +(none)]: go4it!
RE-ENTER PASSWORD: go4it!
PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]: +
PORT B USED FOR [console, printer, both (console and printer), nothing:
+(nothing)]: +
ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]: +
** INFO: The extended routing feature should only be activated
      if the network has been designed to use it.
ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]: +
MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]: +
MAXIMUM CLNS HOP COUNT [3-99, none: +(none)]: +
SET SMALL WINDOW SIZE [yes, no: +(no)]: +
FINE TUNE SESSION MAINTENANCE PARAMETERS [yes, no: +(no)]: +
WARNING: Check network Node Reroute Tables for consistency.
INFO: Redundant switch will be unavailable until placed in service.
      To place redundant switch in service, enter: restore switch.
** INFO: New node name and port data do not take effect until next system boot.
      To boot, enter: init controller. Changes will be made on the standby disk
      only after a switchover to the standby controller.
CC0>
```

* The password entered at this prompt does not appear on the console screen. The example given merely illustrates a password that conforms to password naming conventions. The controller mode switch is in the DIAG position.

** The **INFO** message output depends on the options administered (dual disk or dual Control Computer).

```

CC0> enter
OBJECTS [...node...]: node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: Lucent
LOCAL X.121 DNIC [0000-9999, none: +(none)]: 2001
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Lucent Domestic"
LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: NoNJ
LOCAL X.121 SERVICE REGION [000-999, none: +(none)]: 201
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "New Jersey"
LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: Lincroft
LOCAL X.121 SERVICE AREA [000-999, none: +(none)]: 576
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Lincroft/Middletown"
LOCAL NODE NAME [up to 8 chars, none: +(none)]: Redqueen
LOCAL NODE PREFIX [0-9, none: +(none)]: 9
NATIONAL COUNTRY CODE [1-999: +(1)]: +
INTERNATIONAL PREFIX [0-9: +(0)]: +
LINE 1 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
"The Redqueen Node"
LINE 2 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
"is running current software on"
LINE 3 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
"the development system"
LINE 4 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
" "
LINE 5 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"Notice - Notwithstanding any other lease or license agreement"
LINE 6 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"that may pertain to, or accompany the delivery of, this"
LINE 7 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"computer software, the rights of the Government regarding its"
LINE 8 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"use, reproduction and disclosure are as set forth in"
LINE 9 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"Government Contract No. GS00K89AGS6465."
LINE 10 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"Unpublished - rights reserved under the"
LINE 11 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"copyright laws of the United States"
CONTROL COMPUTER 0 ADDRESS [13, 14, 29, 30, 45, 46, 61, 62, 77, 78,
93, 94, 109, 110, 125, 126: +(14)]: +
CONTROL COMPUTER 1 ADDRESS [14, 29, 30, none: +(none)]: +
MRC [yes, no: +(no)]: +
REDUNDANT SWITCH [yes, no: +(no)]: yes
NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]: +
PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]: +
PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]: +
PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]: +

```

SCREEN 4-47. Prompted Entry: Entering BNS-2000 VCS Local CCM Node Information

enter node

Prompted Entry: Entering BNS-2000 VCS Local Node Information (CCM) *(continued)*

```
* PORT A PASSWORD [6 to 8 chars, none: +(none)]: go4it!
* RE-ENTER PASSWORD: go4it!
  PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]: +
  PORT B USED FOR [console, printer, both (console and printer), nothing:
    +(nothing)]: +
  ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]: +
  AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]: +
  AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]: +

** INFO: The extended routing feature should only be activated
        if the network has been designed to use it.

  ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]: +
  MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]: +
  SET SMALL WINDOW SIZE [yes, no: +(no)]: +
  FINE TUNE SESSION MAINTENANCE PARAMETERS [yes, no: +(no)]: +

  WARNING: Check network Node Reroute Tables for consistency.

** INFO: Redundant switch will be unavailable until placed in service.
        To place redundant switch in service, enter: restore switch.

** INFO: New node name and port data do not take effect until next system boot.
        To boot, enter: init controller.

CC0>
```

* The password entered at this prompt does not appear on the console screen. The example given merely illustrates a password that conforms to password naming conventions. The controller mode switch is in the DIAG position.

** The **INFO** message output depends on the options administered (dual disk, dual Control Computer, redundant Switch).

```

CC0> enter
OBJECTS [...node...]: node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: Lucent
LOCAL X.121 DNIC [0000-9999, none: +(none)]: 2001
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Lucent Domestic"
LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: NoNJ
LOCAL X.121 SERVICE REGION [000-999, none: +(none)]: 201
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "New Jersey"
LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: Lincroft
LOCAL X.121 SERVICE AREA [000-999, none: +(none)]: 576
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Lincroft/Middletown"
LOCAL NODE NAME [up to 8 chars, none: +(none)]: Redqueen
LOCAL NODE PREFIX [0-9, none: +(none)]: 9
NATIONAL COUNTRY CODE [1-999: +(1)]: +
INTERNATIONAL PREFIX [0-9: +(0)]: +
LINE 1 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"The Redqueen Node"
LINE 2 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"is running current software on"
LINE 3 OF BROADCAST MSG [up to 72 chars double quoted, none: +(none)]:
"the development system"
LINE 4 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
"+"
CONTROL COMPUTER 0 ADDRESS [14, 30, 46, 62, 78, 94, 110, 126: +(14)]: 78
INFO: Control Computer 0 at module address 78 is configured in shelf 4.
CONTROL COMPUTER 1 ADDRESS [94, 110, 126, none: +(none)]: 110
INFO: Control Computer 1 at module address 110 is configured in shelf 6.
INFO: Control Shelf 6 will be unavailable until placed in service.
To place control shelf in service, enter: restore shelf.
MRC CONTROLLER SHELF NUMBER [4, 6: +(6)]: +
INFO: Please connect A0, B0, and R0 port of MRC to shelf 4 (CC0)
and A1, B1, and R1 ports to shelf 6 (CC1).
INFO: MRC control shelf 4 do not take effect until next system boot.
To boot enter: init controller.
AUTOMATIC BACKUP [on, off: +(on)]: +
REDUNDANT SWITCH [yes, no: +(no)]: +
NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]: +
PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]: +
PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]: +
PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]: +

```

SCREEN 4-48. Prompted Entry: Entering BNS-2000 Local ECPU Node Information

enter node

Prompted Entry: Entering BNS-2000 Local ECPU Node Information *(continued)*

```
* PORT A PASSWORD [6 to 8 chars, none: +(none)]: go4it!
RE-ENTER PASSWORD: go4it!
PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]: +
PORT B USED FOR [console, printer, both (console and printer), nothing:
+(nothing)]: +
ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]: +
** INFO: The extended routing feature should only be activated
      if the network has been designed to use it.
ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]: +
MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]: +
MAXIMUM CLNS HOP COUNT [3-99, none: +(none)]: +
SET SMALL WINDOW SIZE [yes, no: +(no)]: +
FINE TUNE SESSION MAINTENANCE PARAMETERS [yes, no: +(no)]: +
WARNING: Check network Node Reroute Tables for consistency.
INFO: Redundant switch will be unavailable until placed in service.
      To place redundant switch in service, enter: restore switch.
** INFO: New node name and port data do not take effect until next system boot.
      To boot, enter: init controller. Changes will be made on the standby disk
      only after a switchover to the standby controller.

CC0>
```

* The password entered at this prompt does not appear on the console screen. The example given merely illustrates a password that conforms to password naming conventions. The controller mode switch is in the DIAG position.

** The **INFO** message output depends on the options administered (dual disk or dual Control Computer).

```

CC0> enter
OBJECTS [...node...]: node
LOCAL NETWORK MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: Lucent
LOCAL X.121 DNIC [0000-9999, none: +(none)]: 2001
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Lucent Domestic"
LOCAL AREA MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: NoNJ
LOCAL X.121 SERVICE REGION [000-999, none: +(none)]: 201
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "New Jersey"
LOCAL EXCHANGE MNEMONIC ADDRESS [up to 8 chars, none: +(none)]: Lincroft
LOCAL X.121 SERVICE AREA [000-999, none: +(none)]: 576
DIRECTORY ENTRY [up to 30 chars double quoted, none:
+(none)]: "Lincroft/Middletown"
LOCAL NODE NAME [up to 8 chars, none: +(none)]: Redqueen
LOCAL NODE PREFIX [0-9, none: +(none)]: 9
NATIONAL COUNTRY CODE [1-999: +(1)]: +
INTERNATIONAL PREFIX [0-9: +(0)]: +
LINE 1 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
"The Redqueen Node"
LINE 2 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
"is running current software on"
LINE 3 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
"the development system"
LINE 4 OF BROADCAST MSG: [up to 72 chars double quoted, none: +(none)]:
"+"
CONTROL COMPUTER 0 ADDRESS [14, 30, 46, 62, 78, 94, 110, 126: +(14)]: +
CONTROL COMPUTER 1 ADDRESS [30, none: +(none)]: +
MRC [yes, no: +(no)]: +
DUAL DISK DRIVES [yes, no: +(no)]: +
REDUNDANT SWITCH [yes, no: +(no)]: yes
NODE MONITORED BY STARKEEPER NMS [yes, no: +(yes)]: +
PORT A USED FOR [console, printer, both (console and printer), nothing:
+(both)]: +
PORT A CONNECTED TO ALARM ACTIVATOR [yes, no: +(no)]: +
PORT A BAUD RATE [75, 110, 300, 1200, 1800, 2400, 4800, 9600, 19200:
+(9600)]: +
* PORT A PASSWORD [6 to 8 chars, none: +(none)]: go4it!
* RE-ENTER PASSWORD: go4it!
PORT A EXPIRATION INTERVAL (DAYS) [1-365, none: +(none)]: +
PORT B USED FOR [console, printer, both (console and printer), nothing:
+(nothing)]: +

```

SCREEN 4-49. Prompted Entry: Entering BNS-2000 VCS Local ECPU Node Information

* The password entered at this prompt does not appear on the console screen. The example given merely illustrates a password that conforms to password naming conventions. The controller mode switch is in the DIAG position.

enter node

Prompted Entry: Entering BNS-2000 VCS Local ECPU Node Information *(continued)*

```
ACTIVATE BABBLING SIGNAL FEATURE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE [yes, no: +(yes)]: +
AUTOMATICALLY REMOVE TRUNKS WITH ERRORS [yes, no: +(no)]: +
** INFO: The extended routing feature should only be activated
        if the network has been designed to use it.
ACTIVATE EXTENDED ROUTING FEATURE [yes, no: +(no)]: +
MAXIMUM HOP COUNT PER CALL [3-99, none: +(none)]: +
SET SMALL WINDOW SIZE [yes, no: +(no)]: +
FINE TUNE SESSION MAINTENANCE PARAMETERS [yes, no: +(no)]: +
WARNING: Check network Node Reroute Tables for consistency.
** INFO: Redundant switch will be unavailable until placed in service.
        To place redundant switch in service, enter: restore switch.
** INFO: New node name and port data do not take effect until next system boot.
        To boot, enter: init controller.
CC0>
```

** The **INFO** message output depends on the options administered (dual disk, dual Control Computer, redundant Switch).

verify node

The output of the **verify node** command enables you to check the information entered into the database for a local node.

Syntax

You can input **verify node** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...node...]: node
```

Parameters

None.

```
CC0> verify
OBJECTS [...node...]: node
<report output>
```

SCREEN 4-50. Prompted Entry: Verifying Local Node Information

```

CC0> verify node
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify node
BNS-2000
NODE: Redqueen                      RELEASE: <code>
BACKPLANE TYPE: new                 BUILD: <number>
NODE PREFIX: 9                     SYSTEM: CCM
INTERNATIONAL PREFIX: 1
NATIONAL COUNTRY CODE: 0
LOCAL NETWORK: Lucent              LOCAL X.121 DNIC: 2001
DIR: Lucent Domestic
LOCAL AREA: NoNJ                   LOCAL X.121 SR: 201
DIR: New Jersey
LOCAL EXCHANGE: Lincroft           LOCAL X.121 SA: 576
DIR: Lincroft/Middletown
BROADCAST MESSAGE:
  The Redqueen Node
  is running CURRENT software on
  the development system for a CCM node.

  Notice - Notwithstanding any other lease or license agreement
  that may pertain to, or accompany the delivery of, this
  computer software, the rights of the Government regarding its
  use, reproduction and disclosure are as set forth in
  Government Contract No. GS00K89AGS6465.
  Unpublished - rights reserved under the
  copyright laws of the United States

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify node
CC0 ADDRESS: 78 (shelf 4)           CC1 ADDRESS: 110 (shelf 6)
DUAL DISK DRIVES: yes              AUTO BACKUP: yes
REDUNDANT SWITCH: yes              NODE MONITORED BY STARKEEPER NMS: yes
PORT A INFO: USE: both             BAUD RATE: 9600      ALARM ACTIVATOR: yes
                                PASSWORD: enabled    EXPIRE INT: 30      EXPIRE DATE: 94-12-31
PORT B INFO: USE: nothing           BAUD RATE: 1200     ALARM ACTIVATOR: no
                                PASSWORD: none
BABBLING SIGNAL FEATURE: active    AUTO REMOVE BABBLING PORTS: yes
AUTO REMOVE TRUNKS WITH ERRORS: yes NUMBER OF ERRORS: 50
EXTENDED ROUTING FEATURE: active    HOP COUNT: 5
SMALL WINDOW SIZE: no              CLNS HOP COUNT: 5
* SESSION MAINTENANCE TUNING PARAMETERS:
*   ASSIST NODE STATUS MESGS: no     ADDITIONAL REROUTE REQUESTS: 50%
*   REDUCED REROUTE BANDWIDTH: 20%  REROUTE REQUEST WITHDRAWAL TIME: 15 secs
CC0>

```

SCREEN 4-51. One-line Entry/Output: Verifying BNS-2000 Local CCM Node Information

* Session maintenance data is administered via *StarKeeper II* NMS.

```

CC0> verify node
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify node
  Datakit *II Virtual Circuit Switch (VCS)
  NODE: Redqueen                      RELEASE:<code>
  BACKPLANE TYPE: new                 BUILD: <number>
  NODE PREFIX: 9                     SYSTEM: CCM
  INTERNATIONAL PREFIX: 1
  NATIONAL COUNTRY CODE: 0
  LOCAL NETWORK: Lucent              LOCAL X.121 DNIC: 2001
  DIR: Lucent Domestic               LOCAL X.121 SR: 201
  LOCAL AREA: NoNJ                  LOCAL X.121 SA: 576
  DIR: New Jersey
  LOCAL EXCHANGE: Lincroft
  DIR: Lincroft/Middletown
  BROADCAST MESSAGE:
    The Redqueen Node
    is running CURRENT software on
    the development system for a CCM node.

    Notice - Notwithstanding any other lease or license agreement
    that may pertain to, or accompany the delivery of, this
    computer software, the rights of the Government regarding its
    use, reproduction and disclosure are as set forth in
    Government Contract No. GS00K89AGS6465.
    Unpublished - rights reserved under the
    copyright laws of the United States

  <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify node
  CC0 ADDRESS: 14                    CC1 ADDRESS: none   MRC: yes
  DUAL DISK DRIVES: n/a              AUTO BACKUP: n/a
  REDUNDANT SWITCH: yes              NODE MONITORED BY STARKEEPER NMS: yes
  PORT A INFO: USE: both             BAUD RATE: 9600    ALARM ACTIVATOR: yes
  PASSWORD: enabled                  EXPIRE INT: 30     EXPIRE DATE: 94-12-31
  PORT B INFO: USE: nothing           BAUD RATE: 1200    ALARM ACTIVATOR: no
  PASSWORD: none
  BABBLING SIGNAL FEATURE: active    AUTO REMOVE BABBLING PORTS: yes
  AUTO REMOVE TRUNKS WITH ERRORS: yes  NUMBER OF ERRORS: 50
  EXTENDED ROUTING FEATURE: active    HOP COUNT: 5
  SMALL WINDOW SIZE: no
  * SESSION MAINTENANCE TUNING PARAMETERS:
  * ASSIST NODE STATUS MESGS: no      ADDITIONAL REROUTE REQUESTS: 50%
  * REDUCED REROUTE BANDWIDTH: 20%   REROUTE REQUEST WITHDRAWAL TIME: 15 secs
CC0>

```

SCREEN 4-52. One-line Entry/Output: Verifying BNS-2000 VCS Local CCM Node Information

* Session maintenance data is administered via *StarKeeper II* NMS.

```

CC0> verify node
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify node
BNS-2000
NODE: Redqueen                      RELEASE: <code>
BACKPLANE TYPE: new                 BUILD: <number>
NODE PREFIX: 9                      SYSTEM: ECPU
INTERNATIONAL PREFIX: 1
NATIONAL COUNTRY CODE: 0
LOCAL NETWORK: Lucent              LOCAL X.121 DNIC: 2001
DIR: Lucent Domestic               LOCAL X.121 SR: 201
LOCAL AREA: NoNJ                   LOCAL X.121 SA: 576
DIR: New Jersey
LOCAL EXCHANGE: Lincroft
DIR: Lincroft/Middletown
BROADCAST MESSAGE:
  The Redqueen Node
  is running CURRENT software on
  the development system

  Notice - Notwithstanding any other lease or license agreement
  that may pertain to, or accompany the delivery of, this
  computer software, the rights of the Government regarding its
  use, reproduction and disclosure are as set forth in
  Government Contract No. GS00K89AGS6465.
  Unpublished - rights reserved under the
  copyright laws of the United States

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify node
CC0 ADDRESS: 78 (shelf 4)           CC1 ADDRESS: 110 (shelf 6)
MRC SHELF: 4
DUAL DISK DRIVES: yes              AUTO BACKUP: yes
REDUNDANT SWITCH: yes              NODE MONITORED BY STARKEEPER NMS: yes
PORT A INFO: USE: both             BAUD RATE: 9600    ALARM ACTIVATOR: yes
                                  EXPIRE INT: 30    EXPIRE DATE: 94-12-31
                                  PASSWORD: enabled
PORT B INFO: USE: nothing           BAUD RATE: 1200    ALARM ACTIVATOR: no
                                  PASSWORD: none
BABBLING SIGNAL FEATURE: active    AUTO REMOVE BABBLING PORTS: yes
AUTO REMOVE TRUNKS WITH ERRORS: yes NUMBER OF ERRORS: 50
EXTENDED ROUTING FEATURE: active    HOP COUNT: 5
SMALL WINDOW SIZE: no              CLNS HOP COUNT: 5
* SESSION MAINTENANCE TUNING PARAMETERS:
* ASSIST NODE STATUS MESGS: no      ADDITIONAL REROUTE REQUESTS: 50%
* REDUCED REROUTE BANDWIDTH: 20%   REROUTE REQUEST WITHDRAWAL TIME: 15 secs
CC0>

```

SCREEN 4-53. One-line Entry/Output: Verifying BNS-2000 Local ECPU Node Information

* Session maintenance data is administered via *StarKeeper II* NMS.

```

CC0> verify node
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify node
  Datakit *II Virtual Circuit Switch (VCS)
  NODE: Redqueen                      RELEASE:<code>
  BACKPLANE TYPE: new                  BUILD: <number>
  NODE PREFIX: 9                      SYSTEM: ECPU
  INTERNATIONAL PREFIX: 1
  NATIONAL COUNTRY CODE: 0
  LOCAL NETWORK: Lucent                LOCAL X.121 DNIC: 2001
  DIR: Lucent Domestic
  LOCAL AREA: NoNJ                    LOCAL X.121 SR: 201
  DIR: New Jersey
  LOCAL EXCHANGE: Lincroft            LOCAL X.121 SA: 576
  DIR: Lincroft/Middletown
  BROADCAST MESSAGE:
    The Redqueen Node
    is running CURRENT software on
    the development system

    Notice - Notwithstanding any other lease or license agreement
    that may pertain to, or accompany the delivery of, this
    computer software, the rights of the Government regarding its
    use, reproduction and disclosure are as set forth in
    Government Contract No. GS00K89AGS6465.
    Unpublished - rights reserved under the
    copyright laws of the United States

  <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify node
  CC0 ADDRESS: 14                     CC1 ADDRESS: none   MRC: yes
  DUAL DISK DRIVES: yes               AUTO BACKUP: yes
  REDUNDANT SWITCH: yes               NODE MONITORED BY STARKEEPER NMS: yes
  PORT A INFO: USE: both              BAUD RATE: 9600     ALARM ACTIVATOR: yes
  PASSWORD: enabled                   EXPIRE INT: 30      EXPIRE DATE: 94-12-31
  PORT B INFO: USE: nothing            BAUD RATE: 1200     ALARM ACTIVATOR: no
  PASSWORD: none
  BABBLING SIGNAL FEATURE: active     AUTO REMOVE BABBLING PORTS: yes
  AUTO REMOVE TRUNKS WITH ERRORS: yes  NUMBER OF ERRORS: 50
  EXTENDED ROUTING FEATURE: active     HOP COUNT: 5
  SMALL WINDOW SIZE: no
  * SESSION MAINTENANCE TUNING PARAMETERS:
  *   ASSIST NODE STATUS MESGS: no      ADDITIONAL REROUTE REQUESTS: 50%
  *   REDUCED REROUTE BANDWIDTH: 20%    REROUTE REQUEST WITHDRAWAL TIME: 15 secs
CC0>

```

SCREEN 4-54. One-line Entry/Output: Verifying BNS-2000 VCS Local ECPU Node Information

* Session maintenance data is administered via *StarKeeper II* NMS.

Report Fields

This table correlates each report field heading shown in the output of **verify node** to the parameter for which you are prompted in **enter node** or **change node**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	Corresponding Parameter Name
AUTO BACKUP	AUTOMATIC BACKUP
AUTO REMOVE BABBLING PORTS	AUTOMATICALLY REMOVE BABBLING PORTS FROM SERVICE
AUTO REMOVE TRUNKS WITH ERRORS	AUTOMATICALLY REMOVE TRUNKS WITH ERRORS
BABBLING SIGNAL FEATURE	ACTIVATE BABBLING SIGNAL FEATURE
BACKPLANE TYPE	None: For BNS-2000, new backplanes are shelf types (Series M2 and M1 shelves) old backplanes are the Model 2000 (cabinet types). For BNS-2000 VCS and <i>Datakit II</i> VCS, new backplanes are modular cabinets (shelf types); old backplanes are the the Model 2000 cabinet types.
BROADCAST MESSAGE	LINE x OF BROADCAST MSG
BUILD	None: build number for the software release.
CC0 ADDRESS	CONTROL COMPUTER 0 ADDRESS
CC1 ADDRESS	CONTROL COMPUTER 1 ADDRESS
CLNS HOP COUNT	MAXIMUM CLNS HOP COUNT
DIR	DIRECTORY ENTRY
DUAL DISK DRIVES	DUAL DISK DRIVES
EXTENDED ROUTING FEATURE	ACTIVATE EXTENDED ROUTING FEATURE
HOP COUNT	MAXIMUM HOP COUNT PER CALL
INTERNATIONAL PREFIX	INTERNATIONAL PREFIX
LOCAL AREA	LOCAL AREA MNEMONIC ADDRESS
LOCAL NETWORK	LOCAL NETWORK MNEMONIC ADDRESS
LOCAL EXCHANGE	LOCAL EXCHANGE MNEMONIC ADDRESS
LOCAL X.121 DNIC	LOCAL X.121 DNIC
LOCAL X.121 SA	LOCAL X.121 SERVICE AREA
LOCAL X.121 SR	LOCAL X.121 SERVICE REGION
MRC	MRC (BNS-2000 VCS only)
MRC CONTROLLER SHELF NUMBER	MRC SHELF (BNS-2000 only)
NATIONAL COUNTRY CODE	NATIONAL COUNTRY CODE
NODE	LOCAL NODE NAME

Report Fields *(continued)*

Report Field Name	Corresponding Parameter Name
NODE MONITORED BY STARKEEPER NMS	NODE MONITORED BY STARKEEPER NMS
NODE PREFIX	LOCAL NODE PREFIX
NUMBER OF ERRORS	AFTER HOW MANY ERROR PACKETS (PER TWO MINUTES)
PORT A INFO ALARM ACTIVATOR BAUD RATE EXPIRE DATE EXPIRE INT PASSWORD USE	PORT A CONNECTED TO ALARM ACTIVATOR PORT A BAUD RATE None: actual expiration date PORT A EXPIRATION INTERVAL (DAYS) PORT A PASSWORD PORT A USED FOR
PORT B INFO ALARM ACTIVATOR BAUD RATE *EXPIRE DATE *EXPIRE INT PASSWORD USE	PORT B CONNECTED TO ALARM ACTIVATOR PORT B BAUD RATE None: actual expiration date PORT B EXPIRATION INTERVAL (DAYS) PORT B PASSWORD PORT B USED FOR
REDUNDANT SWITCH	REDUNDANT SWITCH
RELEASE	None: software release number
SMALL WINDOW SIZE	SET SMALL WINDOW SIZE
** SESSION MAINTENANCE TUNING PARAMETERS ADDITIONAL REROUTE REQUESTS ASSIST NODE STATUS MESGS REDUCED REROUTE BANDWIDTH REROUTE REQUEST WITHDRAWAL TIME	** FINE TUNE SESSION MAINTENANCE PARAMETERS None: see <i>StarKeeper II Network Management System (NMS) Core System Guide</i> None: see <i>StarKeeper II Network Management System (NMS) Core System Guide</i> None: see <i>StarKeeper II Network Management System (NMS) Core System Guide</i> None: see <i>StarKeeper II Network Management System (NMS) Core System Guide</i>
SYSTEM	None: CCM or ECPU

* Not shown in this output; appears only when an expiration date is specified.

** Session maintenance data is administered via *StarKeeper II* NMS.

System Responses

This section contains system responses for the **node** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Too many invalid attempts to enter password.

You entered an invalid password too many times.

INFO:

Control Computer <num> at module address <mod addr> is configured in shelf <num>.

For BNS-2000 nodes, shows the control computer that is occupying a particular module address in a numbered shelf.

Control Shelf <num> will be unavailable until placed in service.

To place control shelf in service, enter: restore shelf.

For BNS-2000 nodes, the specified shelf must be put into service with **restore shelf** so it becomes functional.

MRC control shelf <num> do not take effect until next system boot.

To boot, enter: init controller.

For BNS-2000 nodes, the number of the control shelf which houses the MRC function is not recorded in the database until the system is rebooted and the database is synchronized to disk.

New node name and port data do not take effect until next system boot.

To boot, enter: init controller.

This response is output if the node has a single disk and a single Control Computer. Except for password changes, which take effect immediately, all other port changes take effect after the next reboot.

New node name and port data do not take effect until next system boot.

To boot, enter: init controller. Changes will be made on the inactive disk only after booting from that disk.

This response is output if the node has dual disks and a single Control Computer. Except for password changes, which take effect immediately, all other port changes take effect after the next reboot.

New node name and port data do not take effect until next system boot.

To boot, enter: init controller. Changes will be made on the standby disk only after a switchover to the standby controller.

This response is output if the node has dual Control Computers. Except for password changes, which take effect immediately, all other port changes take effect after the next reboot.

INFO: *(continued)*

Please connect A0, B0, and R0 ports of MRC to shelf <num> (CC0) and A1, B1, and R1 ports to shelf <num> (CC1).

For BNS-2000 nodes, connect the specified ports to the indicated shelf number.

Redundant switch will be unavailable until placed in service. To place redundant switch in service, enter: restore switch.

After the redundant Switch is administered, use **restore switch** to put it into service.

The extended routing feature should only be activated if the network has been designed to use it.

This response is output prior to the **ACTIVATE EXTENDED ROUTING FEATURE** prompt to caution you that extended routing must be carefully planned to avoid call routing loops.

INPUT ERROR:

A country code must be in the range of 1 to 3 digits

The country code specified must consist of 1 to 3 numbers from 1–999.

A DNIC must be 4 digits.

A DNIC must consist of four digits.

A mnemonic <level> address cannot be <num> digits.

The specified address level must consist of the correct number of digits. See **enter address**.

A prefix must be 1 digit.

The prefix specified for the local node can only be one number ranging from 0 to 9.

A service <area/region> must be 3 digits.

A service area or region must consist of three numbers.

An International Prefix must be 1 digit.

A single number from 0 to 9 must be specified.

At least one port must be configured as a console.

Either port A or port B must be administered as a console.

Attempt to configure both ports as printers.

You cannot configure both port A and port B as a printer.

Module 2 must be deleted before enhanced switch can be configured.

For BNS-2000 VCS nodes, the information for the module in slot 2 must be deleted before the Switch can be administered.

Node information is already entered. Use 'change node'.

Node information was already entered via **enter node**. Use **change node** to modify node information.

INPUT ERROR: *(continued)*

Passwords must have at least one numeric or special character.

You entered a password that did not contain at least one numeric (0 to 9) or special character. (For example, *host12*, *9cclab*, and *ajump?* are valid passwords.)

Passwords must have at least six characters.

You entered a password with fewer than six characters. Re-enter the password with the correct number of characters.

Passwords must have at least two alphabetic characters.

You entered a password with fewer than two alphabetic characters. Re-enter the password with the correct number of uppercase or lowercase alphabetic characters. (For example, *a123b4*, *host12*, and *Hi9999* are valid passwords, each using at least two alphabetic characters.)

Switch <A/B> must be out of service to change.

Before changing to a non-redundant switch configuration, the standby switch must be out of service.

STR4 must be deleted before changing.

An attempt was made to change to a non-redundant switch configuration on a node with an STR4 Stratum 4 Clock configured. The STR4, unlike the SSM4, is a redundant clock and requires that the node be configured to support two switches. However, both switches are not required to be physically present.

The first digit of the modifier matches the International Prefix.

The first digit of the modifier and the International Prefix must differ.

The International Prefix matches the <first/last> digit of the DNIC <num>.

The first and last numbers of the International Prefix must not match that of the DNIC.

The new and old password must differ by at least three positions.

The new password did not contain at least three characters that were different than the old password. (For example, if the old password was *bye123*, the new password could be *bye456*.)

The two passwords entries do not match.

Your entry at the **RE-ENTER PASSWORD** prompt does not match your initial entry at the **PASSWORD** prompt. Both entries must be the same.

This mnemonic address is already entered.

The specified mnemonic address already exists in the database.

Type 'yes' if the node may be connected to an AIM module with version other than z621; else type 'no'.

For BNS-2000 VCS nodes, you can only enter *yes* or *no* in response to this prompt.

X.121 number already exists.

The specified X.121 address already exists in the database.

<address> is not allowed.

The specified address is not a valid slot number for the Control Computer.

WARNING:

Check network Node Reroute Tables for consistency.

This warning indicates that an attempt was made to change the local node name.

Database Full - Entry Failed: BROADCAST MESSAGE.

The broadcast message could not be stored in the database because the database is full.

Either shorten the message or delete the unused database information.

No local <area/exchange> or service <region/area> address was entered.

You did not enter a local exchange or service area for the node. Call routing errors can occur if this portion of the address is omitted. In a multinode network with exchange and/or service area addresses, calls from other nodes to this node might not be completed. Remote users might receive error messages indicating their requested destination does not exist. (For single node networks—those networks without an area/service region or exchange/area—a local exchange and/or area address does not have to be specified.)

oosmods and oosports command set

The following commands are related to the **oosmods** and **oosports** command set.

Verb/Object	Related Objects	
verify oosmods	ai	msm
	aim	sam
	bridge	samml
	bsc3270	sdlc8
	concentrator	slm
	cpm	switch
	cpmml	trunk
	dkap	tsm8
	e2a	tsmt1
	frm	ty
	frm-m2	x25
	gar	x25p
	lpm	x75
verify oosports	ai	sam
	aim	sdlc8
	cpmml	tsm8
	lpm	tsmt1
	msm	ty

verify oosmods

The **verify oosmods** command summarizes database information for out-of-service modules and concentrators. In the **NODE DATA** section, the command output shows a tally of the modules and concentrators that were taken out of service manually (**MANUAL**) via **remove**; were removed from service automatically because of a fault (**AUTO/FAULT**); are currently downloading software (**DOWNLOADING**); and the number of unused node slots (**NOT USED**). It then lists module specific information.

If a concentrator is in service, but its attached modules are out of service, the next section of the report—**CONCENTRATOR <#> DATA**—details the same information for the in-service concentrator and its attached, out-of-service modules.

Syntax

You can input **verify oosmods** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...oosmods...]: oosmods
MODULE ADDRESS [concentrator address, all: +(all)]:
```

Parameters

MODULE ADDRESS

The set of numbers identifying the address of the module or the word *all* meaning every module address configured in the node. If the module is installed directly in the node, the address is *<module>*. Where: *module* is the node slot number that the module occupies.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the link interface module (LIM), which connects the concentrator to the module, occupies; and *module* is the concentrator slot number of the module.

```
CC0> verify
OBJECTS [...oosmods...]: oosmods
MODULE ADDRESS [concentrator address, all: +(all)]: +
<report output>
```

SCREEN 4-55. Prompted Entry: Verifying All Out-of-Service Modules

```

CC0> verify oosmods all

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify oosmods all

NODE DATA:

SUMMARY INFORMATION
  OUT OF SERVICE
MANUAL      AUTO/FAULT      DOWNLOADING      IN SERVICE      NOT USED
   6         7              0              7             108

MODULE      TYPE      STATUS
6  (shelf 0)  ait3p    out of service (auto/fault)
8  (shelf 0)  ait3p    out of service (manual)
10 (shelf 0)  ait1     out of service (manual)
11 (shelf 0)  ait1     out of service (auto/fault)
16 (shelf 1)  ait1     out of service (manual)
17 (shelf 1)  ait1     out of service (auto/fault)
18 (shelf 1)  ait3     out of service (auto/fault)
19 (shelf 1)  ait1     out of service (manual)
20 (shelf 1)  gar      out of service (manual)
21 (shelf 1)  trkt3i   out of service (auto/fault)
23 (shelf 1)  trkt3i   out of service (auto/fault)
25 (shelf 1)  trkt3i   out of service (manual)
27 (shelf 1)  trkt3i   out of service (auto/fault)

CC0>

```

SCREEN 4-56. One-line Entry/Output: Verifying All Out-of-Service BNS-2000 Modules

```

CC0> verify oosmods +
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify oosmods all

NODE DATA:

SUMMARY INFORMATION
OUT OF SERVICE
MANUAL      AUTO/FAULT      DOWNLOADING      IN SERVICE      NOT USED
   3         5              0              17             103

MODULE      TYPE      STATUS
  4         ty12     out of service (auto/fault)
 10         sft      out of service (auto/fault)
 19         cpmdl     out of service (auto/fault)
 26         samml     out of service (auto/fault)
 33         cpmdl     out of service (auto/fault)
 34         conc      out of service (manual)
 35         cpmhs     out of service (manual)
 36         swt       out of service (manual)

    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify oosmods all

CONCENTRATOR 3 DATA:
SUMMARY INFORMATION
OUT OF SERVICE
MANUAL      AUTO/FAULT      DOWNLOADING      IN SERVICE      NOT USED
   4         0              0              5             7

MODULE      TYPE      STATUS
 3/3        x25       out of service (manual)
 3/6        frm       out of service (manual)
 3/9        bsc3270   out of service (manual)
 3/11       ty6       out of service (manual)
CC0>

```

SCREEN 4-57. One-line Entry/Output: Verifying All Out-of-Service BNS-2000 VCS Modules

Report Fields

Each report field shown in the output of **verify oosmods** is defined in the following table.

Report Field Name	Definition
AUTO/FAULT	Number of modules taken out of service automatically due to a fault
CONCENTRATOR <#> DATA: SUMMARY INFORMATION OUT OF SERVICE	Beginning of oosmods output for each out-of-service module residing in an in-service concentrator
DOWNLOADING	Number of modules downloading software
IN SERVICE	Number of modules in service
MANUAL	Number of modules taken out of service with remove
MODULE	Address of the module
NODE DATA: SUMMARY INFORMATION OUT OF SERVICE	Beginning of oosmods output for all out-of-service modules
NOT USED	Number of module addresses not being used
STATUS	Module service state
TYPE	Module hardware type

verify oosports

The output of the **verify oosports** command lists service state information for supported interface modules. The first portion of the output, **SUMMARY INFORMATION**, tallies the ports for which options have not been specified (**NO OPTIONS SPECIFIED**), those not in service (**OUT OF SERVICE**), and those in service (**IN SERVICE**). The second portion of the report lists each out-of-service port along with the options specified when the port was last configured. Ports are listed in ascending order of their module address.

Syntax

You can input **verify oosports** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...oosports...]: oosports
MODULE ADDRESS [+(all)]:
```

Parameters

MODULE ADDRESS

The set of numbers identifying the address of the module or the word *all*, meaning every module. If the module is installed directly in the node, the address is *<module>*. Where: *module* is the node slot number that the module occupies.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the LIM, which connects the concentrator to the module, occupies; and *module* is the concentrator slot number of the module.

For a SAM, a number that specifies the node slot that the trunk module, which provides connectivity to the SAM, occupies. If the trunk module is a SAMML, the appropriate SAMML port number must be appended to the address, separated by a period *<module.port>*. If the module is SAMML-connected with a dual link, the port number specified must be that of the primary port.

```
CC0> verify
OBJECTS [...oosports...]: oosports
MODULE ADDRESS [+(all)]: +
<report output>
```

SCREEN 4-58. Prompted Entry: Verifying All Out-of-Service Ports

```
CC0> verify oosports all
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify oosports all

SUMMARY INFORMATION
TY PORTS:
NO OPTIONS SPECIFIED      OUT OF SERVICE      IN SERVICE
          7                  0                  5

SUMMARY INFORMATION
AIT1 PORTS:
NO OPTIONS SPECIFIED      OUT OF SERVICE      IN SERVICE
          0                 11                  1

SUMMARY INFORMATION
AIE1 PORTS:
NO OPTIONS SPECIFIED      OUT OF SERVICE      IN SERVICE
          0                  0                  0

SUMMARY INFORMATION
TSM8 PORTS:
NO OPTIONS SPECIFIED      OUT OF SERVICE      IN SERVICE
          0                  0                  0

SUMMARY INFORMATION
TSMT1 PORTS:
NO OPTIONS SPECIFIED      OUT OF SERVICE      IN SERVICE
          0                  0                  0

SUMMARY INFORMATION
SDLC8 PORTS:
NO OPTIONS SPECIFIED      OUT OF SERVICE      IN SERVICE
          0                  0                  0

SUMMARY INFORMATION
CPM-ML PORTS:
NO OPTIONS SPECIFIED      OUT OF SERVICE      IN SERVICE
          0                  0                  0

SUMMARY INFORMATION
MSM PORTS:
NO OPTIONS SPECIFIED      OUT OF SERVICE      IN SERVICE      READY FOR SERVICE
          0                  0                  0              0
```

SCREEN 4-59. One-line Entry/Output: Verifying All Out-of-Service BNS-2000 Ports

One-line Entry/Output: Verifying All Out-of-Service BNS-2000 Ports *(continued)*

```

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify oosports all
  MODULE ADDRESS: 10 (shelf 0)
  MODULE TYPE: ait1
  SERVICE STATE: out (manual)
  DOWNLOAD SERVER: controller
  VERSION: standard
  COMMENT: BNS-2000 R3.0 Regression testing
  SMDS BILLING DESTINATION 1: none
  SMDS BILLING DESTINATION 2: none
  ENABLE MODULE MEASUREMENTS: yes

  PORT    TRANSMIT    THRESHOLD    SRVC    AI-CSU
          CLOCK      PROF ID      out      DISTANCE RANGE
  2    ssm4      default
  3    ssm4      default
  4    ssm4      default      out      0-110
                                     0-110
                                     0-110

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify oosports all
  MODULE ADDRESS: 16 (shelf 1)
  MODULE TYPE: ait1
  SERVICE STATE: out (manual)
  DOWNLOAD SERVER: controller
  VERSION: standard
  COMMENT: BNS-2000 R3.0 Regression testing
  SMDS BILLING DESTINATION 1: none
  SMDS BILLING DESTINATION 2: none
  ENABLE MODULE MEASUREMENTS: yes

  PORT    TRANSMIT    THRESHOLD    SRVC    AI-CSU
          CLOCK      PROF ID      out      DISTANCE RANGE
  1    stratum    default
  2    stratum    default
  3    stratum    default
  4    stratum    default      out      0-110
                                     0-110
                                     0-110
                                     0-110

```

One-line Entry/Output: Verifying All Out-of-Service BNS-2000 Ports *(continued)*

```

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify oosports all
MODULE ADDRESS: 19 (shelf 1)
MODULE TYPE: ait1
SERVICE STATE: out (manual)
DOWNLOAD SERVER: controller
VERSION: standard
COMMENT: testing ai diagnostics
SMDS BILLING DESTINATION 1: none
SMDS BILLING DESTINATION 2: none
ENABLE MODULE MEASUREMENTS: no

PORT    TRANSMIT    THRESHOLD    SRVC    AI-CSU
        CLOCK      PROF ID      DISTANCE RANGE
  1    stratum    default    out      0-110
  2    stratum    default    out      0-110
  3    stratum    default    out      0-110
  4    stratum    default    out      0-110

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify oosports all
MODULE ADDRESS: 69 (shelf 4)
MODULE TYPE: ty12                NCHLS: 13
SERVICE STATE: in

NO OUT OF SERVICE PORTS

CC0>

```

Report Fields

Each report field unique to **verify oosports** is defined in the following table. For a complete description of the remaining fields, refer to the appropriate **verify <module name>** command.

Report Field Name	Definition
IN SERVICE	Number of in-service ports
NO OPTIONS SPECIFIED	Number of unconfigured ports in the database
OUT OF SERVICE	Number of out-of-service ports
SUMMARY INFORMATION <module> PORTS	Beginning of oosports output for the particular module

System Responses

This section contains system responses for the **oosmods** and **oosports** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Concentrator is out of service.

The concentrator has been removed from service manually via **remove concentrator** or automatically via a fault.

Inconsistent configuration.

The command failed because the configuration is not consistent.

No modules entered.

No modules are configured. Use the appropriate **enter <module>** command to add module information.

Only <mod type> modules are allowed.

You can only use **verify oosports** for the indicated module types. For other module types, use the appropriate **verify <module>** command to display service state information.

Too many components.

The command failed because the number of components allowed on the command line was exceeded.

Unable to obtain data.

The command failed because the system was not able to gather the requested information.

INPUT ERROR:

A dual trunk SAM must be addressed by its primary port number.

The SAMDL is a dual-link to a SAMML-connected SAM: one link, designated as the primary, is connected to an odd-numbered port on a SAMML. The other, designated the secondary link, is connected to a consecutive, even-numbered port on a SAMML. To address any port on a SAMDL, its primary port on the SAMML must be specified.

A port number may not be appended to this module's address.

Only SAMML-connected SAMs use the module address format: *module.port*.

A port number must be appended to SAMML module addresses.

Re-enter the desired address using the format: mod.port.

The module address entered for a SAMML-connected SAM did not include a port number as required. The extended addressing scheme applies to SAMML modules only. Use **verify samml** to display SAMML information.

Concentrator Does Not Exist: <addr>

The specified concentrator address was not administered in the database.

INPUT ERROR:

MODULE DOES NOT EXIST: <addr>.

The specified module is not administered in the database.

No module entered.

The database does not have any modules administered.

Not an allowed value.

The value specified is prohibited. Retry the command with the correct value.

Only concentrator address or 'all' are allowed values.

Enter a concentrator address or the word *all*, meaning every concentrator or module.

Parameter out of range: <addr>

The module address specified is not within the allowed range of addresses.

Slot is reserved.

The module address specified has been reserved for another module type.

NO KEY PHRASE:

No working <mod type> modules in the database.

The indicated module types are not administered in the database.

output command set

The following commands are related to the **output** command set.

Verb/Object	Related Verbs	Related Object
route output	change enter verify	node

route output

The **route output** command enables you to redirect command output between the current console port and printer port so that copies of database information can be printed.

Syntax

You can input **route output** in prompted or one-line entry.

```
CC0> route
OBJECTS [...output...]: output
ROUTE DIRECTION [opposite, same]:
```

Parameters

ROUTE DIRECTION

Specifies console output is to be directed to the printer port (*opposite*) or the console port (*same*).

```
CC0> route
OBJECTS [...output...]: output
ROUTE DIRECTION [opposite, same]: opposite
CC0>
```

SCREEN 4-60. Prompted Entry: Routing Command Output to the Printer Port

```
CC0> route
OBJECTS [...output...]: output
ROUTE DIRECTION [opposite, same]: same
CC0>
```

SCREEN 4-61. Prompted Entry: Routing Command Output to the Console Port

```
CC0> route output opposite  
CC0> route output same
```

SCREEN 4-62. One-line Entries: Routing Command Output to the Printer Port and Console Port

System Responses

The **route output** command does not have any associated responses.

profile command set

The following commands are related to the **profile** command set.

Administration	Related Objects		Related Utility Commands
change profile	address	sam	dbaudit
delete profile	aim	trunk	dbresize
enter profile	cpm	ty	dbupgrd
verify profile	epn	x25	
	msm	x25p	
	gateway	x75	

change profile

The **change profile** command enables you to modify information in a billing, call screening, closed user group (CUG), CUG mapping, traffic agreement checking, or X.3 profile.

Syntax

You can input **change profile** in prompted entry only. The defaults for **change profile** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

The **change profile** command syntax for the *billing* and *x3* profile IDs is similar to the syntax shown in *enter profile*. However, the **change profile** command syntax for the *cmap*, *call_screening*, *cug*, and *traf_chk* profiles differs from the syntax shown in **enter profile**:

```
CC0> change
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]:

If TYPE is "billing", "cmap", "call_screening", "cug", or "traf_chk":
  CURRENT PROFILE ID [up to 8 chars]:
  NEW PROFILE ID [up to 8 chars: +(current profile id)]:

If TYPE is "x3":
  CURRENT PROFILE ID [up to 20 chars]:
  NEW PROFILE ID [up to 20 chars: +(current profile id)]:

If TYPE is "cmap", "call_screening", or "traf_chk" and
if CURRENT PROFILE ID is the same as NEW PROFILE ID:
  PROFILE OPERATION [change, delete, enter, none: +(none)]:
If CURRENT PROFILE ID differs from NEW PROFILE ID:
  SAVE PROFILE (current profile id) [yes, no: +(no)]:
If SAVE PROFILE is "yes":
  INFO: All changes will apply to the new profile <new profile id>.
  PROFILE OPERATION [change, delete, enter, none: +(none)]:
If SAVE PROFILE is "no":
  PROFILE OPERATION [change, delete, enter, none: +(none)]:

If TYPE is "cmap" and
if PROFILE OPERATION is "change":
  INFO: Use the following prompts to change the ICN and/or CUG
        corresponding to the selected CUG.
        Hit <DEL> once when finished changing.

  SELECT THE CUG VALUE [1-255]:

  CLOSED USER GROUP [1-255: +(current entry)]:

  INFO: INTERNATIONAL INTERLOCK CODE.
  A [0000-9999: +(current entry)]:
  B [1-65535: +(current entry)]:
```

Syntax (continued)

NOTE: When you finish changing the international interlock code (ICN), also called the international CUG number, for all closed user groups for a profile ID, press at the **SELECT THE CUG VALUE [1-255]:** prompt. The prompt **PROFILE OPERATION [change, delete, enter, none: +(none)]:** will appear again. Enter "none" to save all changes. (If you press here, no changes will be made for that profile ID.)

If PROFILE OPERATION is "delete":

INFO: Use the following prompts to delete the selected CUG and the corresponding ICN.
Hit <DEL> when finished deleting.

CLOSED USER GROUP [1-255]:

DELETE CUG-A/B [yes, no: +(no)]:

PROFILE OPERATION is "enter":

INFO: Use the following prompts to assign a CUG to an ICN index.
At least one assignment must be done.
Hit <DEL> once when assignments are complete.

CLOSED USER GROUP [1-255]:

INFO: INTERNATIONAL INTERLOCK CODE.

A [0000-9999]:
B [1-65535]:

If TYPE is "call_screening":

If PROFILE OPERATION is "change":

INFO: Use the following prompts to change security pattern(s).
Hit <DEL> when finished changing pattern(s).

PATTERN NUMBER:
SECURITY PATTERN [up to 67 char:
+(current entry)]:

. . .

PATTERN NUMBER:
SECURITY PATTERN [up to 67 char:
+(current entry)]:

If PROFILE OPERATION is "delete":

INFO: Use the following prompts to delete security pattern(s).
Hit <DEL> when finished deleting pattern(s).

PATTERN NUMBER:

INFO: Security pattern is:
<security pattern>

DELETE SECURITY PATTERN [yes, no: +(no)]:

. . .

Syntax (*continued*)**PATTERN NUMBER:****INFO:** Security pattern is:

<security pattern>

DELETE SECURITY PATTERN [yes, no: +(no)]: *If PROFILE OPERATION is "enter":***INFO:** Use the following prompts to enter security pattern(s).

Each pattern is assigned a pattern number.

Hit <DEL> when finished entering pattern(s).

X. SECURITY PATTERN [up to 67 chars]:

—

. . .

Z. SECURITY PATTERN [up to 67 chars]:

—

*If PROFILE OPERATION is "none":***CURRENT PROFILE ID** [up to 8 chars]: *If TYPE is "cug":***INFO:** Use the following prompts to change assignment of CUGs to CUG indexes.

At least one assignment must be left.

Hit <DEL> once when changes are completed.

CLOSED USER GROUP INDEX [1-99]:**CLOSED USER GROUP** [1-255, none: +(1)]:**CLOSED USER GROUP INDEX** [1-99]:**CLOSED USER GROUP** [1-255, none: +(1)]:**INCOMING ACCESS PERMISSION** [on, off: +(on)]:**OUTGOING ACCESS PERMISSION** [on, off: +(on)]:**PREFERENTIAL CLOSED USER GROUP INDEX** [1-99, none: +(1)]:*If TYPE is "traf_chk":**If PROFILE OPERATION is "change":***INFO:** Use the following prompts to change DNIC pattern(s).

Hit <DEL> when finished changing pattern(s).

DNIC PATTERN INDEX:**DNIC PATTERN** [up to 21 chars:

+(current entry)]:

—

. . .

DNIC PATTERN INDEX:**DNIC PATTERN** [up to 21 chars:

+(current entry)]:

—

CC PATTERN INDEX:**CC PATTERN** [up to 21 chars:

+(current entry)]:

—

Syntax (continued)

```
. . .
CC PATTERN INDEX:
CC PATTERN [up to 21 chars:
+(current entry)]:
___ 
```

If PROFILE OPERATION is "delete":

INFO: Use the following prompts to delete security pattern(s).
Hit <DEL> when finished deleting pattern(s).

```
DNIC PATTERN INDEX:
INFO: pattern is:
    <pattern>
DELETE DNIC PATTERN [yes, no: +(no)]:
. . .
```

```
DNIC PATTERN INDEX:
INFO: pattern is:
    <pattern>
DELETE DNIC PATTERN [yes, no: +(no)]:
___ 
```

```
CC PATTERN INDEX:
INFO: pattern is:
    <pattern>
DELETE CC PATTERN [yes, no: +(no)]:
. . .
```

```
CC PATTERN INDEX:
INFO: pattern is:
    <pattern>
DELETE CC PATTERN [yes, no: +(no)]:
___ 
```

If PROFILE OPERATION is "enter":

INFO: Use the following prompts to enter security pattern(s).
Each pattern is assigned a pattern number.
Hit <DEL> when finished entering pattern(s).

X. DNIC PATTERN [up to 67 chars]:

```
___
. . .
Z. DNIC PATTERN [up to 67 chars]:
___ 
```

X. CC PATTERN [up to 67 chars]:

```
___
. . .
Z. CC PATTERN [up to 67 chars]:
___ 
```

If PROFILE OPERATION is "none":

CURRENT PROFILE ID [up to 8 chars]:

Parameters

This section contains explanations of parameters used in the **change profile** prompting sequence that differ from those used in **enter profile**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CURRENT PROFILE ID

If **TYPE** is *billing*, *cmap*, *call_screening*, *cug*, *traf_chk*, a string of 1 to 8 alphanumeric characters that specifies the existing name or the profile.

If **TYPE** is *x3*, a string of 1 to 20 alphanumeric characters that specifies the existing name of the profile.

NEW PROFILE ID

If **TYPE** is *billing*, *cmap*, *call_screening*, *cug*, *traf_chk*, a string of 1 to 8 alphanumeric characters that specifies the name that is to replace the **CURRENT PROFILE ID**. When naming a call screening or CUG profile, the words *all* or *none* are not allowed.

If **TYPE** is *x3*, a string of 1 to 20 alphanumeric characters that specifies the name that is to replace the **CURRENT PROFILE ID**. When naming an X.3 profile, the words *default*, *all*, or *none* are not allowed.

DELETE CUG-A/B

If **TYPE** is *cmap*, specifies whether (*yes* or *no*) the two decimal numbers *A* and *B*, which are used to specify the international interlock code, also called the international CUG number (ICN), are to be deleted.

DELETE <DNIC/CC> PATTERN INDEX

If **TYPE** is *traf_chk*, specifies whether (*yes* or *no*) the DNIC or CC pattern should be deleted. The last pattern in the profile cannot be deleted. To delete the contents of the entire profile, the **delete profile** command must be used.

<DNIC/CC> PATTERN INDEX

If **TYPE** is *traf_chk*, specifies the index (the system assigned number) associated with the pattern to be changed, deleted, or entered.

PATTERN NUMBER

If **TYPE** is *call_screening*, specifies the *number* or *identifier* associated with the security pattern. (For a list of pattern numbers, use **verify profile**.)

PROFILE OPERATION

If **TYPE** is *cmap*, *call_screening*, *cug*, or *traf_chk*, specifies whether the contents of the current profile ID are to remain the same (*none*), are to be modified (*change*), or are to be eliminated (*delete*), or a new pattern is to be added (*enter*).

For *cug* and *traf_chk* profiles, the last pattern or assignment in the profile cannot be deleted. To delete the contents of the entire profile, the **delete profile** command must be used.

Parameters *(continued)*

SAVE PROFILE

If **TYPE** is *call_screening*, *cmap*, or *traf_chk*, specifies whether (*yes* or *no*) the **CURRENT PROFILE ID** should be saved and copied to create a new profile ID. If *yes*, subsequent changes apply only to the new profile. If *no*, the current profile is renamed to the new profile. To save database space, avoid having the same set of security patterns duplicated in different profile IDs.

SECURITY PATTERN

If **TYPE** is *call_screening*, a string of 1 to 67 alphanumeric characters or metacharacters that are used to screen call requests. The pattern can contain up to four levels; each level is denoted by a slash.

During the **PROFILE OPERATION** *enter*, each pattern is assigned an identifying **PATTERN NUMBER** (X). New patterns are put into the first vacant entry (the entry held by a previously deleted pattern) and then added after the last pattern. During the **PROFILE OPERATION** *change*, the current pattern appears after the pattern number has been specified. During the **PROFILE OPERATION** *delete*, the current patterns appear in an **INFO** message.

SELECT THE CUG VALUE

If **TYPE** is *cmap*, a number from 1 to 255 that specifies the value assigned to the closed user group.

```

CC0> change
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: billing
CURRENT PROFILE ID [up to 8 chars]: dough
NEW PROFILE ID [up to 8 chars]: dough
BILLING SEGMENT SIZE [16, 64, 128: +(128)]: +
BILLING SEGMENT THRESHOLD [64-65535: +(327670)]: +
RESET PACKET THRESHOLD [1-65536: +(127)]: +
INTERRUPT PACKET THRESHOLD [1-65536: +(127)]: +
PVCs BILLING TIMERS THRESHOLD [30-1440 +(60)]: +
SVCs BILLING TIMERS [on, off: (+off)]: on
SVCs BILLING TIMERS THRESHOLD [30-1440 +(60)]: +
CURRENT PROFILE ID [up to 8 chars]: 
CC0>

```

SCREEN 4-63. Prompted Entry: Changing a Billing Profile ID

```

CC0> change
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: cmap
CURRENT PROFILE ID [up to 8 chars]: mapping
NEW PROFILE ID [up to 8 chars]: mapping
PROFILE OPERATION [change, delete, enter, none: +(none)]: change

INFO: Use the following prompts to change the ICN index and/or CUG
      corresponding to the selected CUG.
      Hit <DEL> once when finished changing.

      SELECT THE CUG VALUE [1-255]: 1
      CLOSED USER GROUP [1-255: +(1)]: +

INFO: INTERNATIONAL INTERLOCK CODE.
A [0000-9999: +(1111)]: 1112
B [1-65535: +(257)]: +
CURRENT PROFILE ID [up to 8 chars]: 
CC0>

```

SCREEN 4-64. Prompted Entry: Changing a CUG Mapping Profile ID

```
CC0> change
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: call_screening
CURRENT PROFILE ID [up to 8 chars]: chtrknj
NEW PROFILE ID [up to 8 chars: +(checktrk)]: chtrknj1
SAVE PROFILE checktrk [yes, no: +(no)]: yes

INFO: All changes will only apply to the new profile chtrknj1.
PROFILE OPERATION [change, delete, enter, none: +(none)]: change
INFO: Use the following prompts to change security pattern(s).
      Hit <DEL> when finished changing pattern(s).

      PATTERN NUMBER: 2
      SECURITY PATTERN [up to 67 chars:
      +(!nj/dpg/mtunk)]:
      !nj/dpg/mtunk*

      PATTERN NUMBER: 

PROFILE OPERATION [change, delete, enter, none: +(none)]: delete
INFO: Use the following prompts to delete security pattern(s).
      Hit <DEL> when finished deleting pattern(s).

      PATTERN NUMBER: 1
      INFO: Security pattern is:
      mtfme*
      DELETE SECURITY PATTERN [yes, no: +(no)]: yes

      PATTERN NUMBER: 

PROFILE OPERATION [change, delete, enter, none: +(none)]: enter
INFO: Use the following prompts to enter security pattern(s).
      Each pattern will be assigned a pattern number.
      Hit <DEL> when finished entering pattern(s).

      1. SECURITY PATTERN [up to 67 chars]: !io

      3. SECURITY PATTERN [up to 67 chars]: 

PROFILE OPERATION [change, delete, enter, none: +(none)]: +
CURRENT PROFILE ID [up to 8 chars]: 
CC0>
```

SCREEN 4-65. Prompted Entry: Changing a Call Screening Profile ID

```

CC0> change
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: cug
CURRENT PROFILE ID [up to 8 chars]: cugnprof
NEW PROFILE ID [up to 8 chars: +(cugnprof)]: +

INFO: Use the following prompts to change assignment of CUGs to CUG indexes.
      At least one assignment must be left.
      Hit <DEL> once when changes are completed.

      CLOSED USER GROUP INDEX [1-20: +(1)]: 1
      CLOSED USER GROUP [1-255, none: +(1)]: +
      CLOSED USER GROUP INDEX [1-20: +(2)]: 2
      CLOSED USER GROUP [1-255, none: +(2)]: +
      CLOSED USER GROUP INDEX [1-20]: 
INCOMING ACCESS PERMISSION [on, off: +(off)]: on
OUTGOING ACCESS PERMISSION [on, off: +(off)]: on
PREFERENTIAL CLOSED USER GROUP INDEX [1-20: +(1)]: +

CURRENT PROFILE ID [up to 8 chars]: cugnprof
NEW PROFILE ID [up to 8 chars: +(cugnprof)]: +

INFO: Use the following prompts to change assignment of CUGs to CUG indexes.
      At least one assignment must be left.
      Hit <DEL> once when changes are completed.

      CLOSED USER GROUP INDEX [1-20: +(1)]: 1
      CLOSED USER GROUP [1-255, none: +(1)]: +
      CLOSED USER GROUP INDEX [1-20: +(2)]: 2
      CLOSED USER GROUP [1-255, none: +(2)]: +
      CLOSED USER GROUP INDEX [1-20]: 
INCOMING ACCESS PERMISSION [on, off: +(off)]: on
OUTGOING ACCESS PERMISSION [on, off: +(off)]: on
PREFERENTIAL CLOSED USER GROUP INDEX [1-20: +(1)]: +

CURRENT PROFILE ID [up to 8 chars]: 
CC0>

```

SCREEN 4-66. Prompted Entry: Changing a CUG Profile ID

```

CC0> change
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: x3
CURRENT PROFILE ID [up to 20 chars]: techpubsprof
NEW PROFILE ID [up to 20 chars: +(techpubsprof)]: devprof
PAD RECALL CHARACTER [single char, dle, none: +(dle)]: +
ECHO [yes, no: +(yes)]: yes

INFO: Select one or more components for Data Forwarding Signal characters
      from the following list. Enter the sum of the selected components.

    0 = no data forwarding character
    1 = all alphanumeric characters
    2 = character CR
    4 = characters ESC, BEL, ENQ, ACK
    8 = characters DEL, CAN, DC2
   16 = characters ETX, EOT
   32 = characters HT, LF, VT, FF
   64 = columns 0 and 1 of IA5 except those listed above in 2, 4, 8, 16, 32

DATA FORWARDING SIGNAL [0-127: +(127)]: +
IDLE TIMER DELAY [notimer, mintimer, .1, 1, 12.75 seconds: +(12.75)]: +
FLOW CONTROL BY NETWORK (XON/XOFF) [no, data, comm&data:
+(no)]: comm&data
PAD SERVICE SIGNAL CONTROL [none, pad, prompt&pad: +(pad)]: +

INFO: Select one or more components for PAD on Receipt of Break
      from the following list. Enter the sum of the selected components.

    0 = nothing
    1 = interrupt
    2 = reset
    4 = send to DTE an indication of break PAD message
    8 = escape from data transfer state
   16 = discard output, to start-stop mode DTE

PAD OPERATION ON RECEIPT OF BREAK [0-31: +(16)]: 9
INFO: Entry 9 consists of the following components: 1, 8
CORRECT [yes, no: +(yes)]: yes
DISCARD OUTPUT [yes, no: +(no)]: no
PADDING AFTER CARRIAGE RETURN [0-12: +(3)]: +
LINE FOLDING [0-255: +(0)]: 2
BINARY SPEED [75, 110, 150, 300, 1200, 1800,
2400, 4800, 9600, 19200: +(19200)]: +
FLOW CONTROL BY DEVICE (XON/XOFF) [yes, no: +(no)]: yes

INFO: Select one or more components for Linefeed Insertion After Carriage
      Return from the following list. Enter the sum of the selected components.

    0 = no linefeed insertion
    1 = when transmitting data to DTE
    2 = when transmitting data from DTE
    4 = when echoing data to DTE

```

SCREEN 4-67. Prompted Entry: Changing an X.3 Profile ID

Prompted Entry: Changing X.3 Profile ID Information *(continued)*

```
LINEFEED INSERTION AFTER CARRIAGE RETURN [0-2, 4-7: +(1)]: +
LINEFEED PADDING [0-7: +(0)]: +
EDITING [yes, no: +(yes)]: +
CHARACTER DELETE [single char, del, sp: +(^H)]: +
LINE DELETE [single char, del, sp: +(@)]: +
LINE DISPLAY [single char, del, sp: +(^L)]: +
EDITING PAD SERVICE SIGNAL [no, print, display, single char: +(print)]: +
ECHO ALL CHARACTERS [yes, no: +(no)]: +
ECHO CR [yes, no: +(no)]: yes
ECHO LF [yes, no: +(yes)]: yes
ECHO VT, HT, FF [yes, no: +(yes)]: +
ECHO BEL, BS [yes, no: +(no)]: +
ECHO ESC, ENQ [yes, no: +(yes)]: +
ECHO ACK, NAK, STX, SOH, EOT, ETB, ETX [yes, no: +(yes)]: +
ECHO OF EDITING CHAR [yes, no: +(no)]: +
ECHO DEL AND ALL OTHER CHARACTERS NOT MENTIONED ABOVE [yes, no: +(no)]: +
PARITY TREATMENT [check, gen, gen&check, no: +(gen)]: +
PAGE WAIT [yes, no: +(yes)]: no
CURRENT PROFILE ID [up to 20 chars]: 
CC0>
```

```
CC0> change
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: traf_chk
CURRENT PROFILE ID [up to 8 chars]: traf1
NEW PROFILE ID [up to 8 chars: +(traf1)]: traf3
SAVE PROFILE traf1 [yes, no: +(no)]: y
PROFILE OPERATION [change, delete, enter, none: +(none)]: change

INFO: All changes will only apply to the new profile traf3.

PROFILE OPERATION [change, delete, enter, none: +(none)]: change

INFO: Use the following prompts to change DNIC pattern(s).
      Hit <DEL> when finished entering DNIC pattern(s).

      DNIC PATTERN INDEX [up to 21 chars:
      +(12*)]:
      +
      DNIC PATTERN INDEX [up to 21 chars:
      +(!23)]:
      !2366
      DNIC PATTERN INDEX [up to 21 chars]: 

INFO: Use the following prompts to change CC pattern(s).
      Hit <DEL> when finished entering CC pattern(s).

      CC PATTERN INDEX [up to 21 chars:
      +(23*2)]: 

      CURRENT PROFILE ID [up to 8 chars]: 
CC0>
```

SCREEN 4-68. Prompted Entry: Changing a Traffic Agreement Checking Profile ID

delete profile

The **delete profile** command enables you to eliminate profile information in the database.

To delete information regarding a call screening profile that is referenced by an in-service or out-of-service trunk module, use **change trunk** first. To delete information regarding a call screening profile that is referenced by an in-service or out-of-service Computer Port Module (CPM), use **change cpm** first. Then at the **CALL SCREENING PROFILE ID** prompt, either specify *none* or a different profile ID.

To delete information contained in a CUG or X.3 profile that is referenced by a service address, remove the address from service first. Then, using **change address**, specify *none* or another profile ID at the **CLOSED USER GROUP PROFILE ID** or **X.3 PROFILE ID** prompt.

To delete information contained in a CUG profile that is referenced by an endpoint (such as an AIM, MSM, TY, asynchronous SAM port, CPM channel, X.25, or X.25P port), remove the appropriate module port from service first. Then, using the appropriate **change <module>** command, specify *none* or another profile ID at the **CLOSED USER GROUP PROFILE ID** prompt.

To delete information contained in an X.3 profile that is referenced by an endpoint (such as an X.25, X.25P, or X.75 port), remove the appropriate module port from service first. Then, using the appropriate **change <module>** command, specify *none* or another profile ID at the **X.3 PROFILE ID** prompt.

To delete information contained in a CUG or X.3 profile that is referenced by a gateway using **change gateway**, specify *none* or another profile ID at the **CLOSED USER GROUP PROFILE ID** or **X.3 PROFILE ID** prompt.

To delete information contained in a traffic agreement checking profile, an international gateway must not be referencing the profile.

To delete information contained in a billing or CUG mapping profile, a gateway must not be referencing the profile.

Syntax

You can input **delete profile** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]:

If TYPE is "billing", "cmap", "call_screening", "cug", or "traf_chk":
  PROFILE ID [up to 8 chars]:

If TYPE is "x3":
  PROFILE ID [up to 20 chars]:
```


delete profile

Parameters

Refer to the parameter definitions supplied in **enter profile**.

```
CC0> delete
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: call_screening
PROFILE ID [up to 8 chars]: chtrknj
CC0>
```

SCREEN 4-69. Prompted Entry: Deleting Profile ID Information

```
CC0> delete profile call_screening chtrknj
```

SCREEN 4-70. One-line Entry: Deleting Profile ID Information

enter profile

The **enter profile** command enables you to add information for the following profile identifiers (IDs):

- A billing (*billing*) profile defines the threshold limits for the timer and counter values used for billing.
- A call screening (*call_screening*) profile defines a set of security patterns that are used to restrict the access of calls originating from a Computer Port Module (CPM) or calls outgoing on a trunk. Security is achieved by comparing the destination string against the set of permitted or forbidden security patterns that have been associated with a CPM or trunk module.
- A closed user group mapping (*cmap*) profile defines the correlation between, or *maps*, the international 32-bit field for CUGs, which is referred to as an international interlock code or the international CUG number [ICN], and the network's existing 8-bit field for CUGs. All ICNs to be routed by the gateway must be configured.
- A closed user group (*cug*) profile defines a set of closed user groups, along with incoming and outgoing access permissions used by the network to restrict calls from the originating endpoints.
- A traffic agreement checking (*traf_chk*) profile defines the pattern set (the traffic agreement) used to check incoming international from the originating country. The traffic agreement check is based on the data network identifier code (DNIC) or the country code (CC) of the calling data terminal equipment (DTE) and on the information contained in the network routing tables.
- An X.3 (x3) profile defines the parameters that an X.3 PAD uses to control an asynchronous terminal accessing the PAD.

Syntax

You can input **enter profile** in prompted entry only. The prompting sequence depends on your response to the **TYPE** prompt. Parameter defaults are shown in parentheses.

For a *call_screening* profile, each security pattern is assigned a number (N) that is used to identify the pattern during iterations of the **change** and **verify** commands. The system automatically assigns a number to the pattern, starting with one, and continues to prompt for patterns until is pressed. If a pattern is not entered, the profile ID is not entered in the database.

For a *cug* profile, the prompting sequence for **CLOSED USER GROUP INDEX** and **CLOSED USER GROUP** is repeated after each entry. The default index (<N>) is initially set to one (1) and is incremented by one during each command loop until is pressed. However, the default is not provided if the indexes are not entered in sequential order. If you press without entering any **CLOSED USER GROUP INDEX** or **CLOSED USER GROUP** information, the command ends and information is not entered for the specified profile.

enter profile

Syntax (continued)

For an x3 profile, with each occurrence of the message:

INFO: Entry <n> consists of the following components: <n1>, <n2>, <n3>,...

the system prompts for verification of the component values specified, then asks:

CORRECT [yes, no: +(yes)]:

If you respond *no*, the system reprompts for the component value. If you respond *yes*, the values specified are entered.

When entering a *traf_chk* profile, each **CC PATTERN** or **DNIC PATTERN** is assigned a pattern number (N), starting with 1, which is used to identify the pattern and which can later be referenced with this number. The system prompts continuously for a pattern until is entered or the database is full. (A traffic agreement checking profile must contain at least one pattern and only 100 elements can be defined.)

At the end of the **DNIC PATTERN** loop, the **CC PATTERN** loop is entered. If database space is unavailable, the database might have to be resized; see **dbresize** in **Utility Commands**.

If patterns are not entered—meaning, was pressed before a pattern was entered during either or both looping sequences—the profile is not stored in the database.

```
CC0> enter
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]:
```

If TYPE is "billing", "cmap", "call_screening", "cug", or "traf_chk":
PROFILE ID [up to 8 chars]:

If TYPE is "billing":
BILLING SEGMENT SIZE [16, 64, 128: +(64)]:
BILLING SEGMENT THRESHOLD [64-65535: +(327677)]:
RESET PACKET THRESHOLD [1-65535: +(127)]:
INTERRUPT PACKET THRESHOLD [1-65535: +(127)]:
PVCs BILLING TIMERS THRESHOLD [30-1440 +(60)]:
SVCs BILLING TIMERS [on, off: (+off)]:

If SVCs BILLING TIMERS is "on":
SVCs BILLING TIMERS THRESHOLD [30-1440 +(60)]:

If TYPE is "cmap":
INFO: Use the following prompts to assign a CUG to an ICN index.
At least one assignment must be made.
Hit <DEL> once when assignments are complete.
CLOSED USER GROUP [1-255]:
INFO: INTERNATIONAL INTERLOCK CODE.
A [0000-9999]:
B [1-65535]:

Syntax (continued)

If TYPE is "call_screening":

INFO: Use the following prompts to enter security pattern(s).
Each pattern will be assigned a pattern number.
Hit <DEL> when finished entering pattern(s).

1. SECURITY PATTERN [up to 67 chars]:

2. SECURITY PATTERN [up to 67 chars]:

<N>. SECURITY PATTERN [up to 67 chars]:

If TYPE is "cug":

GATEWAY CLOSED USER GROUP PROFILE [yes, no: +(no)]:

INFO: Use the following prompts to assign CUGs to CUG indexes.
At least one assignment must be made.
Hit <DEL> once when assignments are complete.

If GATEWAY CLOSED USER GROUP PROFILE is "yes":

CLOSED USER GROUP INDEX [1-99: +(<N>)]:

If GATEWAY CLOSED USER GROUP PROFILE is "no":

CLOSED USER GROUP INDEX [1-20: +(<N>)]:

CLOSED USER GROUP [1-255]:

INCOMING ACCESS PERMISSION [on, off: +(off)]:

OUTGOING ACCESS PERMISSION [on, off: +(off)]:

If GATEWAY CLOSED USER GROUP PROFILE is "yes" and INCOMING ACCESS PERMISSION or OUTGOING ACCESS PERMISSION is "on:"

PREFERENTIAL CLOSED USER GROUP INDEX [1-99, none: +(<N>)]:

If GATEWAY CLOSED USER GROUP PROFILE is "yes" and INCOMING ACCESS PERMISSION or OUTGOING ACCESS PERMISSION is "off:"

PREFERENTIAL CLOSED USER GROUP INDEX [1-99: +(<N>)]:

If GATEWAY CLOSED USER GROUP PROFILE is "no" and INCOMING ACCESS PERMISSION or OUTGOING ACCESS PERMISSION is "on" or "off:"

PREFERENTIAL CLOSED USER GROUP INDEX [1-20: +(<N>)]:

If TYPE is "x3":

PROFILE ID [up to 20 chars]:

PAD RECALL CHARACTER [single char, dle, none: +(dle)]:

ECHO [yes, no: +(yes)]:

INFO: Select one or more components for Data Forwarding Signal characters from the following list. Enter the sum of the selected components.

0 = no data forwarding character

1 = all alphanumeric characters

2 = character CR

4 = characters ESC, BEL, ENQ, ACK

8 = characters DEL, CAN, DC2

16 = characters ETX, EOT

32 = characters HT, LF, VT, FF

64 = columns 0 and 1 of IA5 except those listed above in 2, 4, 8, 16, 32

DATA FORWARDING SIGNAL [0-127: +(126)]:

Syntax (continued)

If the component entered is a sum of more than one component, but not the default:

INFO: Entry <n> consists of the following components: <n1>, <n2>, <n3>, ...

CORRECT [yes, no: +(yes)]:

If CORRECT is "no":

DATA FORWARDING SIGNAL [0-127: +(126)]:

If CORRECT is "yes":

IDLE TIMER DELAY [notimer, mintimer, .1, 1, 12.75 seconds: +(notimer)]:

FLOW CONTROL BY NETWORK (XON/XOFF) [no, data, comm&data:

+(no)]:

PAD SERVICE SIGNAL CONTROL [none, pad, prompt&pad: +(prompt&pad)]:

INFO: Select one or more components for PAD on Receipt of Break

from the following list. Enter the sum of the selected components.

0 = nothing

1 = interrupt

2 = reset

4 = send to DTE an indication of break PAD message

8 = escape from data transfer state

16 = discard output, to start-stop mode DTE

PAD OPERATION ON RECEIPT OF BREAK [0-31: +(2)]:

If the value entered is a sum of more than one value:

INFO: Entry <n> consists of the following components: <n1>, <n2>, <n3>, ...

CORRECT [yes, no: +(yes)]:

If CORRECT is "no":

PAD OPERATION ON RECEIPT OF BREAK [0-31: +(2)]:

If CORRECT is "yes":

DISCARD OUTPUT [yes, no: +(no)]:

PADDING AFTER CARRIAGE RETURN [0-7: +(0)]:

LINE FOLDING [0-255: +(0)]:

BINARY SPEED [75, 110, 150, 300, 1200, 1800,
2400, 4800, 9600, 19200: +(9600)]:

FLOW CONTROL BY DEVICE (XON/XOFF) [yes, no: +(yes)]:

INFO: Select one or more components for Linefeed Insertion After Carriage

Return from the following list. Enter the sum of the selected components.

0 = No linefeed insertion

1 = when transmitting data to DTE

2 = when transmitting data from DTE

4 = when echoing data to DTE

LINEFEED INSERTION AFTER CARRIAGE RETURN [0-2, 4-7: +(0)]:

If the value entered is a sum of more than one value:

INFO: Entry <n> consists of the following components: <n1>, <n2>, <n3>, ...

CORRECT [yes, no: +(yes)]:

If CORRECT is "no":

LINEFEED INSERTION AFTER CARRIAGE RETURN [0-2, 4-7: +(0)]:

Syntax (*continued*)

If **CORRECT** is "yes":

LINEFEED PADDING [0-7: +(0)]:
EDITING [yes, no: +(no)]:
CHARACTER DELETE [single char, del, sp: +(^H)]:
LINE DELETE [single char, del, sp: +(@)]:
LINE DISPLAY [single char, del, sp: +(^L)]:

If **PAD SERVICE SIGNAL CONTROL** is not "none":

EDITING PAD SERVICE SIGNAL [no, print, display, single char: +(no)]:

If the initial **ECHO** was "yes":

ECHO ALL CHARACTERS [yes, no: +(yes)]:

If **ECHO ALL CHARACTERS** is "no":

ECHO CR [yes, no: +(yes)]:
ECHO LF [yes, no: +(yes)]:
ECHO VT, HT, FF [yes, no: +(yes)]:
ECHO BEL, BS [yes, no: +(yes)]:
ECHO ESC, ENQ [yes, no: +(yes)]:
ECHO ACK, NAK, STX, SOH, EOT, ETB, ETX [yes, no: +(yes)]:
ECHO OF EDITING CHAR [yes, no: +(yes)]:
ECHO DEL AND ALL OTHER CHARACTERS NOT MENTIONED ABOVE [yes, no: +(yes)]:

PARITY TREATMENT [check, gen, gen&check, no: +(no)]:

PAGE WAIT [yes, no: +(no)]:

If **PAGE WAIT** is "yes":

NUMBER OF LINEFEED CHARACTERS [1-255: +(23)]:

If **TYPE** is "traf_chk":

INFO: Use the following prompts to enter DNIC pattern(s).
 Each pattern will be assigned a pattern number.
 Hit <DEL> when finished entering DNIC pattern(s).

1.DNIC PATTERN [up to 21 chars]:

—
 ...

N.DNIC PATTERN [up to 21 chars]:

INFO: Use the following prompts to enter CC pattern(s).
 Each pattern will be assigned a pattern number.
 Hit <DEL> when finished entering CC pattern(s).

1.CC PATTERN [up to 21 chars]:

—
 ...

N.CC PATTERN [up to 21 chars]:

If **TYPE** is "billing", "cmap", "call_screening", "cug", "x3", or "traf_chk":

Command loops to **PROFILE ID** prompt.

Parameters

This section contains explanations of parameters used in the **enter profile** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

PROFILE ID

If **TYPE** is *billing*, *cmap*, *call_screening*, *cug*, or *traf_chk*, a string of 1 to 8 alphanumeric characters that names the profile. When naming a call screening or CUG profile, the words *all* or *none* are not allowed.

If **TYPE** is *x3*, a string of 1 to 20 alphanumeric characters that names the profile. When naming an X.3 profile, the words *simple*, *transparent*, *mbit*, *all*, or *none* are not allowed. Up to twenty (20) X.3 profiles can be entered, including the three default profiles supplied by the system named *simple*, *transparent*, and *mbit*; see **verify profile** for a sample of the defaults.

For an X.25 module, a profile can be established that will indicate to the module that it should use grade of service 5 (GOS5) in URP transmissions; this custom profile should begin with characters: **gos5**.

NOTE: The X.3 parameters that follow **PROFILE ID** (see Syntax) correspond to the CCITT X.3 PAD Parameters 1 through 22 respectively, except those beginning with **ECHO . . .**, which correspond to Parameter 20, and **PAGE WAIT** and **NUMBER OF LINEFEED CHARACTERS** which correspond to Parameter 22. In addition, the prompt **CORRECT** corresponds with verifying input to **DATA FORWARDING SIGNAL**, **PAD OPERATION ON RECEIPT OF BREAK**, and **LINEFEED INSERTION AFTER CARRIAGE RETURN**.

TYPE

Specifies that the type of the profile to be entered is billing (*billing*), closed user group (*cug*), closed user group mapping table (*cmap*), call screening (*call screening*), traffic agreement checking (*traf_chk*), or X.3 (*x3*).

For billing:

BILLING SEGMENT SIZE

Specifies the size of user billing data to be 16, 64, or 128 contiguous bytes.

BILLING SEGMENT THRESHOLD

Specifies the maximum value that billing counters can reach before a billing record is sent to *StarKeeper II* NMS through the Control Computer and the counter is cleared.

INTERRUPT PACKET THRESHOLD

Specifies the maximum value that the interrupt packet counter can reach before a billing record is sent to *StarKeeper II* NMS through the Control Computer and the counter is cleared.

Parameters *(continued)***PVCs BILLING TIMERS THRESHOLD**

Specifies the maximum number of minutes that can elapse before two billing records from the same permanent virtual circuit (PVC) are sent to *StarKeeper* II NMS through the Control Computer and the counter is cleared.

RESET PACKET THRESHOLD COUNTER

Specifies the maximum value that the reset packet counter can reach before a billing record is sent to *StarKeeper* II NMS through the Control Computer and the counter is cleared.

SVCs BILLING TIMERS

Specifies whether (*yes* or *no*) the switched virtual circuit (SVC) billing timers can be set.

SVCs BILLING TIMERS THRESHOLD

Specifies the maximum number of minutes that can elapse before two billing records from the same SVC are sent to *StarKeeper* II NMS through the Control Computer and the counter is cleared.

For cmap:**CLOSED USER GROUP**

A number from 1 to 255 which is used to designate that the endpoint may choose to be a member of the specified closed user group (CUG). Each CUG is associated with an index that terminal users specify to select the CUG. CUG membership permits an endpoint to call other endpoints in the same CUG, but prevents the endpoint from calling endpoints that do not belong to the same CUG.

INFO: INTERNATIONAL INTERLOCK CODE A/B

Specifies two decimal numbers, *A* and *B*, that are used to signify the international interlock code (ICN); where: *A* is the DNIC if the public network is a data network or the INIC if the public network is ISDN and *B* is a 1 to 5-digit number that cannot exceed 65,535.

For call screening:**SECURITY PATTERN**

A string of 1 to 67 alphanumeric characters or metacharacters that an internodal trunk module uses to screen incoming calls. The pattern can contain up to four levels; each level is denoted by a slash. To avoid degrading service across the trunks, first enter patterns that would exclude certain addresses. This is done by beginning the address with an exclamation point. Then enter patterns that are used most frequently. When screening calls originating from an X.25 PDN or host are destined for an endpoint having an X.121 address, only the DNIC is screened if the NTN is less than 10 digits. Therefore to restrict access to the node, the security pattern should be:

<up to 16 characters>/*/*/* or <up to 16 characters>///

enter profile

Parameters *(continued)*

For a CUG:

CLOSED USER GROUP

A number from 1 to 250 specifying that the endpoint belongs to the closed user group (CUG) being entered. Membership in a CUG allows an endpoint to call other endpoints in the same CUG, but it does not allow the endpoint to call endpoints not in the same CUG.

CLOSED USER GROUP INDEX

For an asynchronous terminal, X.25 host, hunt group, or local service address, a number from 1 to 20 representing the index entry to be associated with the **CLOSED USER GROUP** to be entered. For a gateway, this index entry ranges from 1 to 99. It is this number that a terminal user specifies when selecting the CUG (endpoint) during call setup.

To conserve database space, enter indexes sequentially. For profiles used for terminals, limit membership to four CUGs; for profiles used for hosts, limit membership to 20 CUGs.

GATEWAY CUG PROFILE

Specifies whether (*yes* or *no*) the CUG profile is to be used for a gateway. This response determines how many closed user groups can be entered.

INCOMING ACCESS PERMISSION

Specifies whether (*yes* or *no*) the endpoint can receive calls from endpoints in the open part of the network (endpoints not belonging to a CUG), or from endpoints in other CUGs that have been granted outgoing access.

OUTGOING ACCESS PERMISSION

Specifies whether (*yes* or *no*) the endpoint can originate calls to endpoints in the open part of the network (endpoints not belonging to a CUG), or to endpoints in other CUGs that have been granted incoming access.

PREFERENTIAL CLOSED USER GROUP INDEX

Specifies that the existing **CLOSED USER GROUP INDEX** to be entered is to be used as the preferred closed user group index—that is, this index is to be used when an endpoint does not specify a CUG during call setup. When a **PREFERENTIAL CLOSED USER GROUP INDEX** is not specified, the default is the lowest numbered **CLOSED USER GROUP INDEX** entered.

A preferential CUG index must be specified for an asynchronous terminal, X.25 host, hunt group, or local service address; it is optional for a gateway.

Parameters *(continued)***For an X.3:****BINARY SPEED**

Specifies the binary speed of the asynchronous device.

CHARACTER DELETE LINE DELETE LINE DISPLAY

Specifies that the character or key sequence designated to perform the function of deleting a character, deleting a line, or displaying a line is: a single character (*single char*), a delete (*del*), a space (*sp*), or a control character. The single character is a character within the range of characters in the *International Alphabet (IA5)*.

When using the "at" sign symbol @ in conjunction with the **LINE DELETE** parameter, precede the "at" sign with a backslash (\); for example: \@. The backslash indicates that the function to be performed is not that of the editing key function that erases a line.

CORRECT

Specifies whether (*yes* or *no*) the sum of the numbers entered in the previous prompts (**DATA FORWARDING SIGNAL**, **PAD OPERATION ON RECEIPT OF BREAK**, and **LINE FEED INSERTION AFTER CARRIAGE RETURN**) and the numbers identified in the previous **INFO** message are correct.

DATA FORWARDING SIGNAL

The number specifying the character set received from the terminal that is to be recognized by the PAD to complete assembly and to transmit a packet. To specify a combination of character sets (components), enter the **sum** of the representative numbers. See Syntax for numbers and their respective character sets.

DISCARD OUTPUT

Specifies whether (*yes* or *no*) the PAD can discard packets received from the PDN or host upon request, rather than disassembling and transmitting them to the terminal.

ECHO

Specifies whether (*yes* or *no*) the PAD is to echo data received from the terminal. For a profile associated with a local service address, enter *no* to avoid creating an endless echo loop.

ECHO ACK, NAK, STX, SOH, EOT, ETB, ETX

Specifies whether (*yes* or *no*) the characters representing acknowledge, negative acknowledge, start of text, start of header, end of transmission, end-of-transmission block, and end-of-transmission text should be echoed.

ECHO ALL CHARACTERS

If **ECHO** is *yes*, specifies whether (*yes* or *no*) all characters are to be echoed. If **ECHO** is *no*, one or more of the following sets of characters can be echoed: **CR**, **LF**, **VT**, **HT**, **FF**, **BEL**, **BS**, **ESC**, **ENQ**, **ACK**, **NAK**, **STX**, **SOH**, **EOT**, **ETB**, **ETX**, editing characters, or all other characters and **DEL**. (See the following **ECHO** prompts.)

Parameters *(continued)*

ECHO BEL, BS

Specifies whether (*yes* or *no*) the characters representing the bell and backspace should be echoed.

ECHO CR

Specifies whether (*yes* or *no*) the character representing the return key (*carriage return*) should be echoed.

ECHO DEL AND ALL OTHER CHARACTERS NOT MENTIONED ABOVE

Specifies whether (*yes* or *no*) all other characters and the delete character (**DEL**) excluding **CR**, **LF**, **VT**, **HT**, **FF**, **BEL**, **BS**, **ESC**, **ENQ**, **ACK**, **NAK**, **STX**, **SOH**, **EOT**, **ETB**, **ETX**, and editing characters should be echoed.

ECHO ESC, ENQ

Specifies whether (*yes* or *no*) the characters representing escape and enquiry should be echoed.

ECHO LF

Specifies whether (*yes* or *no*) the character representing linefeed should be echoed.

ECHO OF EDITING CHAR

Specifies whether (*yes* or *no*) the previously entered editing characters for character delete, line delete, and line display should be echoed.

ECHO VT, HT, FF

Specifies whether (*yes* or *no*) the characters representing the vertical tab, horizontal tab, and form feed should be echoed.

EDITING

Specifies whether (*yes* or *no*) character delete, line delete, and line display capabilities are to be available in the data transfer state.

EDITING PAD SERVICE SIGNAL

If the **PAD SERVICE SIGNAL CONTROL** is not *none*, specifies that the editing PAD service signal is to be transmitted in one of the following formats: *print*, for printing terminals; *display*, for display terminals; *single char*, which contains only one IA5 character; or *no*, meaning an editing PAD service signal is not to be specified.

FLOW CONTROL BY NETWORK (XON/XOFF)

Specifies the flow control function between the network and the terminal currently accessing the PAD (that is, whether the PAD is to send special characters to indicate that it is ready to receive characters from the terminal): *no* (do not use XON/XOFF); *data* (use XON/XOFF for data transfer); or *comm&data* (use XON/XOFF for both command and data transfer).

Parameters *(continued)***FLOW CONTROL BY DEVICE (XON/XOFF)**

Specifies whether (*yes* or *no*) the flow control for the terminal currently accessing the PAD is under the control of the device; that is, whether the terminal is to send special characters (XON/XOFF) to indicate its readiness to receive characters from the PAD.

IDLE TIMER DELAY

Specifies the amount of time between successive characters received from the terminal which, when exceeded, causes the PAD to complete assembly and to transmit a packet. This amount of idle time can range from the minimum amount of time (*mintimer*, which is .05 seconds) to .1, 1, or 12.75 seconds; in addition, no data forwarding during a time-out can be specified with *notimer*. The option *mintimer* corresponds to an enhanced character processing mode that skips these X.3 parameters: **DATA FORWARDING SIGNAL, PADDING AFTER CARRIAGE RETURN, LINE FOLDING, LINEFEED INSERTION AFTER CARRIAGE RETURN, LINEFEED PADDING, EDITING, and PAGE WAIT.**

LINEFEED INSERTION AFTER CARRIAGE RETURN

The number specifying whether/when the PAD is to insert a linefeed after a carriage return. To specify a combination of actions (components), enter the **sum** of the representative numbers. See Syntax for numbers and their specifications.

LINEFEED PADDING

A range of numbers from 0 to 7 specifying the padding characters to be inserted into a transmitted string after a linefeed.

LINE FOLDING

Specifies the maximum number of characters per line to be 0 to 255; where 0 specifies no line folding and 1 to 255 specify the number of characters per line. The proper formatting characters are inserted automatically.

NUMBER OF LINEFEED CHARACTERS

If **PAGE WAIT** is yes, a number from 1 to 255 specifying the number of linefeed characters; thus, when the PAD transmits this number of linefeed characters, it should stop transmitting additional characters to the terminal.

PADDING AFTER CARRIAGE RETURN

A range of numbers from 0 to 7 that specifies how many padding characters are to be inserted into a transmitted string after a carriage return; where: 0 represents no padding characters; 7 represents seven padding characters.

PAD OPERATION ON RECEIPT OF BREAK

The number specifying the action the PAD should perform when it receives a break from a terminal. To specify a combination of actions (components), enter the **sum** of the representative numbers.

Parameters *(continued)*

PAD RECALL CHARACTER

Specifies if the terminal user can escape from the data transfer state, or the connection in progress state, to send PAD command signals. Allowed entries are *none* for no PAD recall, *dle*, or any single ASCII character with decimal values from 32 to 126.

PAD SERVICE SIGNAL CONTROL

Specifies the PAD service signal to be transmitted as: *pad*, meaning the PAD service signal is transmitted; *prompt&pad*, meaning the PAD service signal and a prompt PAD signal are transmitted; or *none*, meaning signals are not to be transmitted.

PAGE WAIT

Specifies whether (*yes* or *no*) the PAD should suspend transmitting additional characters to the terminal after it has transmitted a specified number of linefeeds.

PARITY TREATMENT

Specifies whether the PAD is to check parity in the data stream from the start-stop device and/or generate parity in the data stream to the start-stop device: *no* specifies no parity checking or generating; *check* specifies parity checking; *gen* specifies parity generation; *gen&check* specifies parity generation and checking.

For traf_chk:

<CC/DNIC> PATTERN

A string of 1 to 21 alphanumeric characters or meta characters that are combined to form a pattern that is used to screen incoming calls coming from an international X.75 gateway.

The allowed metacharacters are *, ?, !, [,], and -.

- The * (asterisk) matches a string of characters of any length. Two asterisks per pattern level are allowed.
- The ! (exclamation point) matches all characters except those that follow.
- The ? (question mark) matches any single character.
- The [] (two brackets) match any character or characters placed within.
- The - (dash) is used to express a range of characters specified within the brackets.

Each **CC PATTERN** or **DNIC PATTERN** specified is assigned a unique pattern number (N). Each pattern can later be referenced using this number.

```
CC0> enter
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: billing
PROFILE ID [up to 8 chars]: dough
BILLING SEGMENT SIZE [16, 64, 128: +(128)]: +
BILLING SEGMENT THRESHOLD [64-65535: +(32767)]: +
RESET PACKET THRESHOLD [1-65536: +(127)]: +
INTERRUPT PACKET THRESHOLD [1-65536: +(127)]: +
PVCs BILLING TIMERS THRESHOLD [30-1440 +(60)]: +
SVCs BILLING TIMERS [on, off: (+off)]: +
PROFILE ID [up to 8 chars]: 
CC0>
```

SCREEN 4-71. Prompted Entry: Entering a Billing Profile ID

```
CC0> enter
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: cmap
PROFILE ID [up to 8 chars]: mapping

INFO: Use the following prompts to assign a CUG to an ICN index.
      At least one assignment must be made.
      Hit <DEL> once when assignments are complete.

      CLOSED USER GROUP [1-255]: 1

INFO: INTERNATIONAL INTERLOCK CODE.
      A [0000-9999]: 1111
      B [1-65535]: 257
PROFILE ID [up to 8 chars]: 
CC0>
```

SCREEN 4-72. Prompted Entry: Entering a CUG Mapping Profile ID

enter profile

```
CC0> enter
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: call_screening
PROFILE ID [up to 8 chars]: chtrknj

INFO: Use the following prompts to enter security pattern(s).
      Each pattern will be assigned a pattern number.
      Hit <DEL> when finished entering pattern(s).

1. SECURITY PATTERN [up to 67 chars]:
   mtfme*
2. SECURITY PATTERN [up to 67 chars]:
   !nj/dpg/mtunk
3. SECURITY PATTERN [up to 67 chars]: 
PROFILE ID [up to 8 chars]: 
CC0>
```

SCREEN 4-73. Prompted Entry: Entering a Call Screening Profile ID

```
CC0> enter
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: cug
PROFILE ID [up to 8 chars]: cugnprof
GATEWAY CLOSED USER GROUP PROFILE [yes, no: +(no)]:no

INFO: Use the following prompts to assign CUGs to CUG indexes.
      At least one assignment must be made.
      Hit <DEL> once when assignments are complete.

CLOSED USER GROUP INDEX [1-20: +(1)]: 1
CLOSED USER GROUP [1-255]: 1
CLOSED USER GROUP INDEX [1-20: +(2)]: 2
CLOSED USER GROUP [1-255]: 2
CLOSED USER GROUP INDEX [1-20: +(3)]: 
INCOMING ACCESS PERMISSION [on, off: +(off)]: +
OUTGOING ACCESS PERMISSION [on, off: +(off)]: +
PREFERENTIAL CLOSED USER GROUP INDEX [1-20: +(1)]: +
```

SCREEN 4-74. Prompted Entry: Entering Two CUG Profile IDs

Prompted Entry: Entering Two CUG Profile IDs *(continued)*

```

PROFILE ID [up to 8 chars]: cugprof
GATEWAY CLOSED USER GROUP PROFILE [yes, no: +(no)]: yes
INFO: Use the following prompts to assign CUGs to CUG indexes.
      At least one assignment must be made.
      Hit <DEL> once when assignments are complete.

CLOSED USER GROUP INDEX [1-99: +(1)]: 1
CLOSED USER GROUP [1-255]: 1
CLOSED USER GROUP INDEX [1-99: +(2)]: 2
CLOSED USER GROUP [1-255]: 2
CLOSED USER GROUP INDEX [1-99: +(3)]: 
INCOMING ACCESS PERMISSION [on, off: +(off)]: +
OUTGOING ACCESS PERMISSION [on, off: +(off)]: +
PREFERENTIAL CLOSED USER GROUP INDEX [1-99: +(1)]: 
CC0>

```

```

CC0> enter
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: x3
PROFILE ID [up to 20 chars]: techpubsprof
PAD RECALL CHARACTER [single char, dle, none: +(dle)]: +
ECHO [yes, no: +(yes)]: yes
INFO: Select one or more components for Data Forwarding Signal characters
      from the following list. Enter the sum of the selected components.

      0 = no data forwarding character
      1 = all alphanumeric characters
      2 = character CR
      4 = characters ESC, BEL, ENQ, ACK
      8 = characters DEL, CAN, DC2
      16 = characters ETX, EOT
      32 = characters HT, LF, VT, FF
      64 = columns 0 and 1 of IA5 except those listed above in 2, 4, 8, 16, 32

DATA FORWARDING SIGNAL [0-127: +(126)]: 127
INFO: Entry 127 consists of the following components: 1, 2, 4, 8, 16, 32, 64
CORRECT [yes, no: +(yes)]: +
IDLE TIMER DELAY [notimer, mintimer, .1, 1, 12.75 seconds: +(notimer)]: 12.75
FLOW CONTROL BY NETWORK (XON/XOFF) [no, data, comm&data:
+(no)]: +
PAD SERVICE SIGNAL CONTROL [none, pad, prompt&pad: +(prompt&pad)]: pad

```

SCREEN 4-75. Prompted Entry: Entering an X.3 Profile ID

Prompted Entry: Entering an X.3 Profile ID *(continued)*

INFO: Select one or more components for PAD on Receipt of Break from the following list. Enter the sum of the selected components.

- 0 = nothing
- 1 = interrupt
- 2 = reset
- 4 = send to DTE an indication of break PAD message
- 8 = escape from data transfer state
- 16 = discard output, to start-stop mode DTE

PAD OPERATION ON RECEIPT OF BREAK [0-31: +(2)]: 17

INFO: Entry 17 consists of the following components: 1, 16

CORRECT [yes, no: +(yes)]: no

PAD OPERATION ON RECEIPT OF BREAK [0-31: +(2)]: 16

DISCARD OUTPUT [yes, no: +(no)]: no

PADDING AFTER CARRIAGE RETURN [0-12: +(0)]: 3

LINE FOLDING [0-255: +(0)]: +

BINARY SPEED [75, 110, 150, 300, 1200, 1800,
2400, 4800, 9600, 19200: +(9600)]: 19200

FLOW CONTROL BY DEVICE (XON/XOFF) [yes, no: +(yes)]: no

INFO: Select one or more components for Linefeed Insertion After Carriage Return from the following list. Enter the sum of the selected components.

- 0 = no linefeed insertion
- 1 = when transmitting data to DTE
- 2 = when transmitting data from DTE
- 4 = when echoing data to DTE

LINEFEED INSERTION AFTER CARRIAGE RETURN [0-2, 4-7: +(0)]: 1

LINEFEED PADDING [0-7: +(0)]: 0

EDITING [yes, no: +(no)]: yes

CHARACTER DELETE [single char, del, sp: +(^H)]: +

LINE DELETE [single char, del, sp: +(@)]: +

LINE DISPLAY [single char, del, sp: +(^L)]: +

EDITING PAD SERVICE SIGNAL [no, print, display, single char: +(no)]: print

ECHO ALL CHARACTERS [yes, no: +(yes)]: no

ECHO CR [yes, no: +(yes)]: no

ECHO LF [yes, no: +(yes)]: +

ECHO VT, HT, FF [yes, no: +(yes)]: +

ECHO BEL, BS [yes, no: +(yes)]: no

ECHO ESC, ENQ [yes, no: +(yes)]: +

ECHO ACK, NAK, STX, SOH, EOT, ETB, ETX [yes, no: +(yes)]: +

ECHO OF EDITING CHAR [yes, no: +(yes)]: no

ECHO DEL AND ALL OTHER CHARACTERS NOT MENTIONED ABOVE [yes, no: +(yes)]: no

PARITY TREATMENT [check, gen, gen&check, no: +(no)]: gen

PAGE WAIT [yes, no: +(no)]: yes

NUMBER OF LINEFEED CHARACTERS [1-255: +(23)]: +

PROFILE ID [up to 20 chars]:

CC0>

```
CC0> enter
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: traf_chk
PROFILE ID [up to 8 chars]: traff1
INFO: Use the following prompts to enter DNIC pattern(s).
      Each pattern will be assigned a pattern number.
      Hit <DEL> when finished entering DNIC pattern(s).

1.DNIC PATTERN [up to 21 chars]:
12*
2.DNIC PATTERN [up to 21 chars]:
!2366
3.DNIC PATTERN [up to 21 chars]:
Delete

INFO: Use the following prompts to enter CC pattern(s).
      Each pattern will be assigned a pattern number.
      Hit <DEL> when finished entering CC pattern(s).

1.CC PATTERN [up to 21 chars]:
23*2
2.CC PATTERN [up to 21 chars]:
2[20-40]3
3.DNIC PATTERN [up to 21 chars]:
Delete

PROFILE ID [up to 20 chars]: Delete
CC0>
```

SCREEN 4-76. Prompted Entry: Entering a Traffic Agreement Checking Profile ID

verify profile

The output of the **verify profile** command enables you to check the contents of the database for a particular profile or all profiles.

Syntax

You can input **verify profile** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]:
PROFILE ID(S) [comma separated list, all: +(all)]:

If TYPE is "billing", "call_screening", "cmap", "cug", or "traf_chk":
DETAIL [high, low: +(low)]:
```

Parameters

DETAIL

If **TYPE** is *billing*, *call_screening*, *cmap*, *cug*, or *traf_chk*, specifies if the output is to show a limited amount of information (*low* detail) or more information (*high* detail).

If **TYPE** is *call_screening*, *low* detail shows the contents of the profile; *high* detail shows the contents of the profile, plus all associated trunk or Computer Port Module (CPM) addresses or Computer Port Module Multiple Link (CPMML) module and port addresses. If **TYPE** is *cug*, *low* detail shows the contents of the profile; *high* detail shows the contents of the profile, plus all addresses, gateway identifiers, and associated modules. If **TYPE** is *billing*, *cmap*, or *traf_chk*, *low* detail shows only profile information; *high* detail shows all gateway identifiers that are associated with the profile, plus all profile information.

PROFILE ID(S)

If **TYPE** is *billing*, *call_screening*, *cmap*, or *traf_chk*, a string of 1 to 8 alphanumeric characters that identifies the profile to be verified; if **TYPE** is *x3*, a string of 1 to 20 alphanumeric characters that identifies the profile to be verified; or the word *all* meaning every profile administered.

TYPE

Specifies if the profile to be verified is *billing* (*billing*), closed user group (*cug*), closed user group mapping table (*cmap*), call screening (*call_screening*), traffic agreement checking (*traf_chk*), or X.3 (*x3*).

```

CC0> verify profile x3 all
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile x3 all
PROFILE ID:      simple      mbit      transparent
-----
 1 PAD RECALL:    dle         none      none
 2 ECHO:          yes         no        no
 3 DATA F SIG:   126         0         0
 4 IDLE TIMER:    notimer     notimer    mintimer
 5 FC BY NWK:     no          no        no
 6 PAD SVCSIG:    prompt&pad  none      none
 7 OP ON BREAK:   2          2         2
 8 DISC OUTP:     no          no        no
 9 PAD AFT CR:    0           0         0
10 LINE FOLD:     0           0         0
11 BIN SPEED      9600        9600      9600
12 FC BY DEV      yes         yes        yes
13 LF INSERT:     0           0         0
14 LF PADDING:    0           0         0
15 EDITING:       no          no        no
16 CHAR DEL:      ^H         ^H         ^H
17 LINE DEL:      ^L         ^L         ^L
18 LINE DISP:     @           @          @
19 E PAD SVG:     display     no        no
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile x3 all
20 ECHO CR:       yes         no        no
20 ECHO LF:       yes         no        no
20 ECHO VT/HT/FF: yes         no        no
20 ECHO BEL/BS:   yes         no        no
20 ECHO ESQ/ENQ:  yes         no        no
20 ECHO ACK ETC:  yes         no        no
20 ECHO EDT CHAR: yes         no        no
20 ECHO DEL/OTH:  yes         no        no
21 PARITY TREAT:  no          no        no
22 PAGE WAIT:     no          no        no
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile x3 all
& . . .
CC0>

```

SCREEN 4-77. One-line Entry/Output: Verifying All X.3 Profile Default Values

```
CC0> verify
OBJECTS [...profile...]: profile
TYPE [billing, call_screening, cmap, cug, traf_chk, x3]: call_screening
PROFILE ID(s) [comma separated list, all: +(all)]: all
DETAIL [high, low: +(low)]: high
<report output>
```

SCREEN 4-78. Prompted Entry: Verifying Call Screening Profile IDs

```
CC0> verify profile billing dough high
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile billing dough high
THE FOLLOWING GATEWAYS REFERENCE THIS PROFILE:
BILLING PROFILE ID: dough
BILLING SEGMENT SIZE: 128
BILLING SEGMENT THRESHOLD: 327670
RESET PACKET THRESHOLD: 127
INTERRUPT PACKET THRESHOLD: 127
PVCs BILLING TIMERS THRESHOLD: 60
SVCs BILLING TIMERS: on
SVCs BILLING TIMERS THRESHOLD: 60
CC0>
```

SCREEN 4-79. One-line Entry/Output: Verifying Billing Profile IDs

```
CC0> verify profile cmap mapping high
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile cmap mapping high
THE FOLLOWING GATEWAYS REFERENCE THIS PROFILE.
CUG MAP PROFILE ID: mapping
INTERNATIONAL INTERLOCK CODE
CLOSED USER GROUP      A      B
1                        1112   257
CC0>
```

SCREEN 4-80. One-line Entry/Output: Verifying CUG Mapping Profile IDs

```
CC0> verify profile call_screening all high
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile call_screening all high
CALL SCREENING PROFILE ID: chtrknj
TRUNK MODULE ADDRESS
50
NUMBER    PATTERN
  1      mtfme*
  2      !nj/dpg/mtunk
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile call_screening all high
CALL SCREENING PROFILE ID: chtrknj1
TRUNK MODULE ADDRESS
51
NUMBER    PATTERN
  1      !io*
  2      !nj/dpg/mtunk*
CC0>
```

SCREEN 4-81. One-line Entry/Output: Verifying Call Screening Profile IDs

```
CC0> verify profile cug all high
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile cug all high
  CUG PROFILE ID: cugnprof          GATEWAY: no
  ADDRESSES:
  MNEMONIC      X.121
  KI1           541
  GATEWAY/NETWORK
  admn
  MODULE TYPE    MODULE ADDRESS
  x25            11
  INCOMING ACCESS PERMISSION: on
  OUTGOING ACCESS PERMISSION: on
  PREFERENTIAL CUG INDEX: 1
  CUG INDEX      CUG
  1              1
  2              2
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile cug all high
  CUG PROFILE ID: cugprof          GATEWAY: yes
  GATEWAY/NETWORK
  admn
  INCOMING ACCESS PERMISSION: on
  OUTGOING ACCESS PERMISSION: on
  PREFERENTIAL CUG INDEX: 1
  CUG INDEX      CUG
  1              1
  2              2
CC0>
```

SCREEN 4-82. One-line Entry/Output: Verifying CUG Profile IDs

```

CC0> verify profile x3 devprof
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  verify profile x3 devprof

PROFILE ID:      devprof
-----
 1 PAD RECALL:    dle
 2 ECHO:          yes
 3 DATA F SIG:   127
 4 IDLE TIMER:    12.75
 5 FC BY NWK:     comm&data
 6 PAD SVCSIG:    pad
 7 OP ON BREAK:   9
 8 DISC OUTP:     no
 9 PAD AFT CR:    3
10 LINE FOLD:     2
11 BIN SPEED      19200
12 FC BY DEV:     yes
13 LF INSERT:     1
14 LF PADDING:    0
15 EDITING:       yes
16 CHAR DEL       ^H
17 LINE DEL:      @
18 LINE DISP:     ^L
19 E PAD SVG:     print
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  verify profile x3 devprof

20 ECHO CR:       yes
20 ECHO LF:       yes
20 ECHO VT/HT/FF: yes
20 ECHO BEL/BS:   no
20 ECHO ESC/ENQ:  yes
20 ECHO ACK ETC:  yes
20 ECHO EDT CHAR: no
20 ECHO DEL/OTH:  no
21 PARITY TREAT:  gen
22 PAGE WAIT:     no
CC0>

```

SCREEN 4-83. One-line Entry/Output: Verifying an X.3 Profile ID


```

CC0> verify profile traf_chk traff1 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify profile traf_chk traff1 high
  THE FOLLOWING GATEWAYS REFERENCE THIS PROFILE:
  CHECK OF TRAFFIC AGREEMENT PROFILE ID: traff1
    NUMBER  DNIC PATTERN
      1     12*
      2     !23
    NUMBER  CC PATTERN
      1     23*2
      2     2[20-40]3
CC0>

```

SCREEN 4-84. One-line Entry/Output: Verifying Traffic Agreement Checking Profile IDs

Report Fields

This table correlates each report field heading shown in the output of **verify profile** to the parameter for which you are prompted in **enter profile** or **change profile**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	<i>billing</i> Parameter Name
BILLING PROFILE ID	PROFILE ID
BILLING SEGMENT SIZE	BILLING SEGMENT SIZE
BILLING SEGMENT THRESHOLD	BILLING SEGMENT THRESHOLD
INTERRUPT PACKET THRESHOLD	INTERRUPT PACKET THRESHOLD
PVCs BILLING TIMERS THRESHOLD	PVCs BILLING TIMERS THRESHOLD.
RESET PACKET THRESHOLD	RESET PACKET THRESHOLD
SVCs BILLING TIMERS	SVCs BILLING TIMERS
SVCs BILLING TIMERS THRESHOLD	SVCs BILLING TIMERS THRESHOLD.
THE FOLLOWING GATEWAYS REFERENCE THIS PROFILE	None: the gateway identifiers that reference the profile

Report Fields *(continued)*

Report Field Name	<i>cmap</i> Parameter Name
CLOSED USER GROUP	CLOSED USER GROUP
CUG MAP PROFILE ID	PROFILE ID
INTERNATIONAL INTERLOCK CODE A/B	INFO: INTERNATIONAL INTERLOCK CODE A/B
THE FOLLOWING GATEWAYS REFERENCE THIS PROFILE	None: the gateway identifiers that reference the profile

Report Field Name	<i>call_screening</i> Parameter Name
CALL SCREENING PROFILE ID	PROFILE ID
NUMBER	PATTERN NUMBER
PATTERN	SECURITY PATTERN
MODULE ADDRESS	None: address of the internodal trunk module or CPM module
MODULE TYPE	None: type of module

Report Field Name	<i>cug</i> Parameter Name
ADDRESSES MNEMONIC X.121	None: local mnemonic service address None: local X.121 service address
CUG	CLOSED USER GROUP
CUG INDEX	CLOSED USER GROUP INDEX
CUG PROFILE ID	PROFILE ID
GATEWAY	GATEWAY CLOSED USER GROUP PROFILE
GATEWAY/NETWORK	If administered as a gateway, the gateway using the profile as a gateway CUG profile If not administered as a gateway, the gateway using the profile as a network CUG profile
INCOMING ACCESS PERMISSION	INCOMING ACCESS PERMISSION
MODULE ADDRESS	None: address of the module
MODULE TYPE	None: type of module
OUTGOING ACCESS PERMISSION	OUTGOING ACCESS PERMISSION
PREFERENTIAL CUG INDEX	PREFERENTIAL CLOSED USER GROUP INDEX

Report Fields *(continued)*

Report Field Name	x.3 Parameter Name
BIN SPEED	BINARY SPEED
CHAR DEL	CHARACTER DELETE
DATA F SIG	DATA FORWARDING SIGNAL
DISC OUTP	DISCARD OUTPUT
E PAD SVG	EDITING PAD SERVICE SIGNAL
ECHO	ECHO
ECHO ACK ETC.	ECHO ACK, NAK, STX, SOH, EOT, ETB, ETX
ECHO BEL/BS	ECHO BEL, BS
ECHO CR	ECHO CR
ECHO DEL/OTH	ECHO DEL AND ALL OTHER CHARACTERS NOT MENTIONED ABOVE
ECHO EDT CHAR	ECHO OF EDITING CHAR
ECHO ENS/ENQ	ECHO ESC, ENQ
ECHO LF	ECHO LF
ECHO VT/HT/FF	ECHO VT, HT, FF
EDITING	EDITING
FC BY DEV	FLOW CONTROL BY DEVICE (XON/XOFF)
FC BY NWK	FLOW CONTROL BY NETWORK (XON/XOFF)
IDLE TIMER	IDLE TIMER DELAY
LF INSERT	LINEFEED INSERTION AFTER CARRIAGE RETURN
LF PADDING	LINEFEED PADDING
LINE DEL	LINE DELETE
LINE DISP	LINE DISPLAY
LINE FOLD	LINE FOLDING
OP ON BREAK	PAD OPERATION ON RECEIPT OF BREAK
PAD AFT CR	PADDING AFTER CARRIAGE RETURN
PAD RECALL	PAD RECALL CHARACTER
PAD SVCSIG	PAD SERVICE SIGNAL CONTROL
PAGE WAIT	PAGE WAIT
PARITY TREAT	PARITY TREATMENT
PROFILE ID	PROFILE ID
CHECK OF TRAFFIC AGREEMENT PROFILE ID	PROFILE ID

Report Fields *(continued)*

Report Field Name	<i>x.3</i> Parameter Name (continued)
CC PATTERN	CC PATTERN
DNIC PATTERN	DNIC PATTERN
NUMBER	None: the corresponding system supplied number
THE FOLLOWING GATEWAYS REFERENCE THIS PROFILE	None: the gateway identifiers that refer to the profile

System Responses

This section contains system responses for the **profile** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Database is full. Pattern <num> has not been <changed/entered>.

The maximum number of patterns have been added to the database. Only the pattern number specified cannot be changed/entered. To change the pattern limit, use **dbresize**.

Database is full. Profile <id> has not been entered.

The maximum number of profiles have been added to the database. The profile ID specified cannot be entered. To change the profile limit, use **dbresize**.

Database is full. Profile <id> was not copied to profile <new id>.

The maximum number of profiles have been added to the database. The profile ID specified cannot be copied to the new profile ID. To change the profile limit, use **dbresize**.

No more profiles may be entered; maximum has been reached.

The limit of X.3 profile identifiers is 20, including three system profiles (*simple*, *mbit*, and *transparent*). This limit, which has been reached, cannot be exceeded.

No more profiles may be entered; maximum has been reached. Specified profiles have been entered.

The limit of X.3 profile identifiers is 20, including three system profiles (*simple*, *mbit*, and *transparent*). This limit, which has been reached, cannot be exceeded. All X.3 profiles entered up to this point are saved in the database.

Pattern <num> has not been entered.

The specified pattern number has not been administered.

INFO:

All changes will only apply to the new profile <id>.

The current profile has been copied to the new profile and only the patterns in the new profile can be modified.

Database is full. All data entered has been saved.

No more space exists in the database. All patterns entered were saved; however, additional patterns cannot be entered. Pressing does not cause any entries to be lost. For more database space, run **dbresize**.

Database transaction limit reached. All data entered has been saved.

The limit for database transactions occurred while entering patterns. All data entered is saved. Pressing does not cause any entries to be lost.

INFO: *(continued)*

DNIC/CC Pattern is:

The current DNIC/CC pattern is displayed before it can be deleted.

Entry <n> consists of the following components: <n1>, <n2>, <n3>, ...

By entering the number represented by *n*, you are selecting several values for the operation specified.

No more patterns may be entered; maximum has been reached. All data entered has been saved.

The database has run out of space. All patterns entered were saved; however, additional patterns cannot be entered. To obtain more database space, use **dbresize**.

Security pattern is:

<security pattern>

The current security pattern selected is displayed before it is deleted.

Select one or more components for Data Forwarding Signal characters from the following list. Enter the sum of the selected components.

You are prompted to pick a number representing the data forwarding signal character to be entered. Enter a single number or, to represent multiple characters, enter the sum of the numbers.

Select one or more components for Linefeed Insertion After Carriage Return from the following list. Enter the sum of the selected components.

You are prompted to pick a number representing the type of linefeed insertion after a carriage return to be specified. Enter a single number or, to represent multiple characters, enter the sum of the numbers.

Select one or more components for PAD on Receipt of Break from the following list. Enter the sum of the selected components.

You are prompted to pick a number representing the PAD on receipt of break character that you want to enter. Enter a single number or, to represent multiple characters, enter the sum of the numbers.

Use the following prompts to assign CUGs to CUG indexes.

At least one assignment must be made.

Hit <DEL> once when assignments are complete.

You are repetitively prompted to assign CUGs to CUG indexes until you press

.

Use the following prompts to change assignment of CUGs to CUG indexes.

At least one assignment must be left. Hit <DEL> once when changes are completed.

You are repetitively prompted to assign CUGs to CUG indexes until you press

.

INFO: *(continued)*

Use the following prompts to <change/delete> <security> pattern(s).

Hit <DEL> when finished <changing/deleting> patterns.

You are repetitively prompted for the security pattern until you press .

Use the following prompts to enter <security> pattern(s).

Each pattern will be assigned a pattern number.

Hit <DEL> when finished entering pattern(s).

You are repetitively prompted for the security pattern until you press .

INPUT ERROR:

A call screening profile referenced by a trunk may not be deleted.

The specified call screening profile cannot be deleted because a trunk module is referencing this profile. Use **verify profile** to determine which trunk module is affected and use **change trunk** to change its call screening profile assignment.

A CUG must be assigned to the preferential index.

The system assigns default indexes sequentially to minimize the number of indexes without CUGs. If you do not assign a CUG to the preferential index (the lowest available number in the sequence), the default index sequence ceases to be displayed.

A <billing/cmap/CUG/traf_chk> profile referenced by <an address/a <an international> gateway> may not be deleted.

Information for the specified profile type cannot be deleted because it is being referenced by the indicated the entity.

'A' must be 4 digits.

The number represented as A, which is a DNIC or INIC, must be four digits in length.

All is not an allowed value.

You cannot use the word *all* to name a profile.

An exclamation mark may only be the first character of a pattern.

A pattern can begin with an exclamation point; however the exclamation point cannot be used elsewhere in the pattern.

An X.3 profile referenced by an <address/gateway/X.25/X.25P/X.75 port> may not be deleted.

The X.3 profile assignment must be changed before profile information can be deleted.

At least one profile id must be entered.

You cannot perform the attempted function without at least one profile entered. See **enter profile**.

<Billing/Call screening/CUG/CUG Map/X.3> profile <id> is already entered.

The specified profile ID type was already administered.

Call screening profile <id> is not entered.

The call screening profile ID was not administered in the database.

INPUT ERROR: *(continued)***<CUG profile/DNIC/CC Pattern> <id> is not entered.**

The specified CUG profile ID has not been administered.

CUG value out of range

The numbers 1 to 255 are the acceptable CUG value range.

Default X.3 profile may not be <changed/deleted>.

You cannot change or delete the X.3 system generated default profile. The default is the only valid response to the prompt.

DNIC/CC Pattern <num> is not entered.

The specified pattern number has not be administered.

Input string too long.

The parameter response contained too many characters.

Missing <[/]> in pattern <pattern>.

Each starting bracket must have a corresponding closing bracket; each closing bracket must have a corresponding opening bracket.

No <Billing/CUG/CUG Map> profiles have been entered.

Billing profiles or CUG profiles were not administered in the database.

None is not an allowed value.

You cannot use the word *none* to name a billing, call screening, CUG, or X.3 profile.

Not an Allowed Value: <error>.

The entry is prohibited because, for example, you entered <mbit> when that profile is already entered in the database.

Only 2 asterisks allowed per level in <pattern>.

The pattern entered contained more than two asterisks per level.

Only 4 levels allowed in <pattern>.

Only three slashes (///) can be specified in a pattern.

Pattern <num> is not entered.

The indicated pattern number does not exist. Use **verify profile** to display all valid pattern numbers and patterns.

The Billing Profile cannot change because the port <num> of the module <addr> is in service.

Billing information cannot be changed while the module port is in service.

The last pattern in the profile cannot be deleted.

The remaining pattern cannot be deleted. A profile must have at least one pattern. To delete profile information, use **delete profile**.

The profile must have at least one DNIC or CC pattern.

Minimally one DNIC or CC pattern must be specified for each profile being entered.

INPUT ERROR: *(continued)*

<traf_chk/X.3> profile <id> is already entered.

The indicated profile ID has already been administered.

X.3 profile referenced by an in-service <address/X.25/X.25P/X.75 port> may not be changed.

The X.3 profile you attempted to change is referenced by an in-service address or X.25, X.25P, or X.75 port.

X.3 profile <id> is already entered.

You cannot enter the specified X.3 profile ID because it is already administered.

X.3 profile <simple> is already entered.

You have already entered the default profile *simple* in the database.

X.3 profile <mbit/simple/transparent> may not be <changed/deleted>.

The information in the specified X.3 profile cannot be modified or eliminated from the database.

X.3 profile <id> is not entered.

The specified X.3 profile ID is not administered.

<n> is not an allowed value.

The number specified is not a valid number.

NO KEY PHRASE:

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file was removed from the disk.) Contact your local support group.

WARNING:

Call screening profile <id> has not been entered.

At least one pattern must be assigned to the profile.

A profile must have at least one pattern. The profile has not been entered into the database.

<CUG/traf_chk> profile <id> has not been <entered/changed>.

Information regarding the specified profile has not been added to or modified in the database.

<CUG/X.3> profile was not changed on module <addr>.

Remove and restore module.

The specified profile has not been changed in the database for the indicated module address.

routes command set (BNS-2000 only)

The following commands are related to the **display routes** command.

Verb/Object	Related Objects
display routes	gar trunk

display routes (BNS-2000 only)

The **display routes** command shows how SMDS traffic is routed over connectionless trunk and Group Address Resolver (GAR) modules. The command can generate routing information in two forms:

- If a module is specified, the routing and screening tables for that module are displayed.
- If an SMDS address is specified, the modules through which that address can pass are displayed.

Syntax

You can input **display routes** in prompted or one-line entry.

```
CC0> display
OBJECTS [...routes...]: routes
TYPE [address, module: +(module)]:

If TYPE is "module":
  MODULE ADDRESS [+(all)]:
  DETAIL [high, low: +(low)]:

If TYPE is "address":
  SMDS ADDRESS TYPE [destination, source: +(destination)]:
  SMDS ADDRESS NUMBER:
  DETAIL [high, low: +(low)]:
```

Parameters

This section contains explanations of the parameters used in the display routes prompting sequence.

DETAIL

Specifies if the command output shows a limited amount of information (*low* detail) or more (*high* detail). *low* detail is the default.

MODULE ADDRESS

The Series M2 Shelf slot number that the connectionless trunk or GAR module occupies. If *all* is specified, a report is generated for all connectionless trunk and GAR modules.

SMDS ADDRESS NUMBER

A 10-digit source or destination address number. PDUs, or messages, can carry 15-digit addresses for international routing. BNS-2000 Release 3.0 supports only addressing within World Numbering Zone 1. Numbers in this region are 11 digits long, consisting of the country code "1" plus 10 digits.

Parameters *(continued)***SMDS ADDRESS TYPE**

Since SMDS is a connectionless service, every message, or PDU, contains both a *source* and *destination* address. The *source* address identifies the endpoint that originated the message. The *destination* address identifies an individual recipient or a group of recipients. Connectionless trunks and GAR modules can make routing decisions based on the *source* address if the *destination* address specifies a group of recipients. Otherwise, they use the *destination* address. See the *BNS-2000 SMDS Guide* for more details.

If *destination* is specified, the report shows all trunks that pass PDUs with a specific destination address. If *source* is specified, the report shows all trunks and GARs that pass PDUs with a specific source address.

TYPE

Specifies the report format. If the **TYPE** is *module*, the report shows the contents of the routing and screening tables for a trunk or GAR module. If the **TYPE** is *address*, the report shows the slot numbers of trunk and GAR modules that will pass a specific address through their routing or screening tables.

```
CC0> display
OBJECTS [...routes...]: routes
TYPE [address, module: +(module)]: module
MODULE ADDRESS [+(all)]: 6
DETAIL [high, low: +(low)]: low
<report output>
```

SCREEN 4-85. Prompted Entry: Module Type Report

```
CC0> display
OBJECTS [...routes...]: routes
TYPE [address, module: +(module)]: address
SMDS ADDRESS TYPE [destination, source: +(destination)]: destination
SMDS ADDRESS NUMBER: 9085551212
DETAIL [high, low: +(low)]: low
<report output>
```

SCREEN 4-86. Prompted Entry: Address Type Report

```
CC0> display routes module 6 low
```

```
<yy-mm-dd> <hh:mm:ss> NODE=<name>
```

```
M display routes module 6 low
```

```
MODULE 6
```

```
-----
```

```
ROUTING STATUS: Active
```

```
WEIGHT: 4          FAR END WEIGHT: 4          FAR END MODULE: 1
```

```
DESTINATION ADDRESS ROUTING TABLE (EGRESS):
```

```
---
```

```
ADDRESSES PASSED:
```

```
714-123-XXXX
```

```
DESTINATION ADDRESS SCREENING TABLE (INGRESS):
```

```
---
```

```
ADDRESSES PASSED:
```

```
888-580-XXXX
```

```
999-111-XXXX
```

```
999-124-XXXX
```

```
999-222-XXXX
```

```
999-555-XXXX
```

```
ADDRESSES PASSED IF OFFICIAL:
```

```
201-292-XXXX
```

```
201-402-XXXX
```

```
CARRIERS:
```

```
288
```

```
SOURCE ADDRESS ROUTING TABLE (EGRESS):
```

```
---
```

```
ADDRESSES PASSED:
```

```
888-580-XXXX
```

```
SOURCE ADDRESS SCREENING TABLE (INGRESS):
```

```
---
```

```
ADDRESSES PASSED:
```

```
714-123-XXXX
```

SCREEN 4-87. One-line Entry/Output: Module Type Report

```
CC0> display routes address destination 9085551212 low

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  display routes address destination 7141230000

      DESTINATION ADDRESS: 714-123-0000

      MODULE  DIRECTION
      -----
      1      <---  IF OFFICIAL
      6      --->
CC0>
```

SCREEN 4-88. One-line Entry/Output: Address Type Report

Report Fields

DESTINATION ADDRESS

The destination address for which the report is generated.

<DESTINATION/SOURCE> ADDRESS <ROUTING/SCREENING> TABLE (<EGRESS/INGRESS>):

The routing/screening tables are used by trunk modules to determine which PDUs enter (ingress) or leave (egress) the node. The routing and screening tables for destination addresses determine where individually addressed PDUs and group addressed PDUs outside their Group Address Agent (GAA) networks are routed. The routing and screening tables for source addresses determine where group addressed PDUs inside their agent network are routed.

The source address routing and screening tables are not used on intercarrier trunks. See the Implementation Concepts chapter of the *SMDS Guide* for a more complete explanation of trunk routing tables.

Each table shows the disposition of a range of addresses. The following are examples of the conventions used for displaying address ranges:

- 908-580-4XXX** The range 908-580-4000 to 908-580-4999
- 908-580-XXXX** The range 908-580-0000 to 908-580-9999
- 908-XXX-XXXX** The range 908-000-0000 to 908-999-9999
- 908-580-2XXX** The set 908-580-2005, -2007, -2013, -2017, ... -2999 (that is, all numbers in the range -2000 to -2999 whose remainder after dividing the least significant 4 digits by 8 is either 5 or 7).

Report Fields *(continued)*

The reports divide the address ranges in the table according to the following routing decisions the trunk may make:

ADDRESSES NOT PASSED	The trunk will not pass any PDUs with addresses in these ranges. This part of the report is displayed only if the detail level is <i>high</i> .
ADDRESSES NOT PASSED IF OFFICIAL	The trunk will not pass any PDUs with addresses in these ranges if they originate from an official SNI. This part of the report is displayed only if the detail level is <i>high</i> .
ADDRESSES PASSED	The trunk passes all PDUs with addresses in these ranges.
ADDRESSES PASSED IF OFFICIAL	The trunk passes PDUs with addresses in these ranges only if they originate from an official SNI.
CARRIERS	This list represents SMDS carrier identification codes (SMDS CICs) for Interexchange Carriers.
DIRECTION	Indicates the direction in which PDUs will (or will not) pass through the module. The direction is shown as an arrow, as follows:
--->	PDUs with the specified address leave the node through this module.
<---	PDUs with the specified address enter the node through this module.
-X->	PDUs with the specified address will not leave the node through this module. This output is generated only when high detail is specified.
<-X-	PDUs with the specified address will not enter the node through this module. This output is generated only when high detail is specified.

The direction can be qualified as follows:

IF OFFICIAL	The PDU passes in this direction only if it originates from an official SNI.
IF PREFERRED IC IS <smds_cic>	The PDU passes in this direction only if the SMDS CIC of the subscriber's preferred IC is <smds_cic>.
NOT PASSED	The PDU will not pass in this direction. This output is generated only when high detail is specified.
NOT PASSED IF OFFICIAL	The PDU will not pass in this direction if it originates from an official SNI. This output is generated only when high detail is specified.

FAR END MODULE

This is the Series M2 shelf slot number of the module on the far end of the trunk. This value is not displayed for intercarrier trunks and GAR modules.

Report Fields *(continued)***FAR END NETWORK ADDRESS TABLE**

This field is generated only for private interLATA trunks when high detail is specified. It is a subset of the **DESTINATION ADDRESS ROUTING TABLE**. It lists the address ranges assigned to BNS-2000 nodes in the LATA on the far end of the trunk. The trunk uses this table to determine whether a group addressed PDU passing through the trunk will enter the GAA network when it reaches the far end.

FAR END NODE ADDRESS

This field is generated only for private interLATA trunks when high detail is specified. It specifies an address range assigned to the node on the far end of the trunk.

<FAR END> WEIGHT

Each trunk module is assigned a weight by the network administrator. When the Routing Algorithm Process (RAP) computes the routing tables for a trunk, it finds the least weighted path. **WEIGHT** is the value assigned to the trunk in the node on which **display routes** is running. **FAR END WEIGHT** is the value assigned to the far end trunk. These values should generally be the same. This value is not displayed for intercarrier trunks and GAR modules.

MODULE

Indicates the Series M2 shelf slot number of the trunk or GAR module that will (or will not) pass PDUs with the specified address.

ROUTING STATUS

This is the status of the trunk or GAR as seen by the RAP. Possible routing statuses are:

ACTIVE	Indicates that the trunk module is actively routing traffic.
FAILED	Indicates that the transmission facility is experiencing a carrier failure, or the trunk module on the far end of the facility is out of service. Use the dstat command with the <i>high detail</i> option to investigate the source of the problem. This value is not displayed for GAR modules.
OUT OF SERVICE	The trunk module or GAR is out of service. Use the restore command to return the module to service.
WAITING FOR H MESSAGE	For internodal and private interLATA trunks, indicates that the RAP process is waiting for an H (Hello) message from the RAP process running on the far end node. This message can appear shortly after a trunk module is restored to service or the node is booted. If this happens, wait thirty seconds and run display routes again. If the status remains the same for an extended period, it may indicate that the SMDS node information has not been administered on either the near or far end node. Check this in the <i>StarKeeper II NMS Graphics System</i>

Report Fields *(continued)*

Otherwise, this indicates a problem with the far end node.

This field does not apply to intercarrier trunks and GAR modules, as the RAP process does not send or receive message across intercarrier trunks, and GAR modules do not connect to nodes. However, this message might be displayed for a short period as the node is booting.

WAITING FOR R MESSAGE

For internodal and private interLATA trunks, indicates that the RAP process is waiting for an R (Routing) message from the RAP process running on the far end node. This message can appear shortly after a trunk module is restored to service or the node is booted. If this happens, wait thirty seconds and run **display routes** again. If the status remains the same for an extended period, this indicates a problem with the far end node.

These values are not displayed for intercarrier trunks and GAR modules.

SOURCE ADDRESS

The source address for which the report is generated.

System Responses

The **display routes** command does not have any associated system responses.

schedule command set

The following commands are related to the **schedule** command set.

Verb/Object	Related Verbs	Related Objects	
schedule measurements	dmeas	ai bsc3270 concentrator connections cpmml dkap frm frm-m2 gar lpm	sam samml sdlc8 trunk tsm8 tsmt1 x25 x25p x75
	change enter verify	node	
	verify	schedule	
schedule periodic_bill	change delete enter verify	cpm frm frm-m2 tsm8	tsmt1 x25 x75
	verify	schedule	
verify schedule	change delete dmeas enter schedule verify	ai bsc3270 concentrator connections cpmml dkap frm frm-m2 gar lpm measurements	node periodic_bill sam samml sdlc8 trunk tsm8 tsmt1 x25p x25 x75

schedule measurements

The **schedule measurements** command enables you to specify the current measurements collection schedule for a particular type of measurements report and, in most instances, whether or not the report is to be automatically printed. Measurements reports are highly effective tools for identifying and locating network problems. They provide available traffic measurements and, in some cases, performance measurements. Data on call setup, module connections, channel connections, and trunk use are included.

Scheduled measurements can be output in human-readable form or machine-readable form (a set of standard interface messages used to facilitate machine-to-machine communication). The output method is determined at the **NODE MONITORED BY STARKEEPER NMS** prompt during an iteration of **enter node** or **change node**.

If the node is not being monitored by *StarKeeper II* NMS (a *no* response), measurements are automatically generated in human-readable form at hourly intervals on the node system console. This automatic printing can be turned off without turning off the hourly measurements collection.

If the node is being monitored by *StarKeeper II* NMS (a *yes* response), measurements must be scheduled through *StarKeeper II* NMS. For BNS-2000 VCS nodes, measurements are held for the duration of one interval. During that interval, *StarKeeper II* NMS polls the node for the measurements. Measurements are then requested through the *StarKeeper II* NMS console.

Scheduled measurements are available for AI, BSC3270, CPMML/CPMML-HS, DKAP, FRM, FRM-M2, GAR, LPM, SAM, SAMML, SDLC8, TSM8, TSM-T1, X.25, X.25P, and X.75 modules along with connections for receiving and trunk groups. For BNS-2000 VCS nodes, scheduled measurements are available for the FRM, LPM, TSM-T1, X.25P, and X.75, but they are output in machine readable format only and are sent to *StarKeeper II* NMS. For BNS-2000 nodes, scheduled measurements are available for the AI, GAR, and FRM-M2 modules, along with the SMDS trunks (TRK-T3, TRK-T3A, TRK-T3S, TRK-E3, TRK-E3A and TRK-T3I), but they are output in machine readable format only and sent to *StarKeeper II* NMS. Use **verify schedule** to check the current report printing schedule for all modules.

Refer to the *StarKeeper II NMS Core System Guide* for more information on scheduling measurements.

Syntax

You can input **schedule measurements** in prompted entry only. Once the node is booted and measurements are initially scheduled, the defaults for **schedule measurements** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

The prompts and parameter options shown in this and in the following sections are based on initial system values and an empty database. A populated database and any subsequent changes alter these initial values; therefore, system output will not match the prompts and parameter options shown.

Syntax (*continued*)

```
CC0> schedule
OBJECTS [...measurements...]: measurements
TYPE [<module types>]:
HOURLY REPORT [on, off: +(on)]:

If TYPE is "cpmml" or "samml":
    INCLUDE CRC ERROR DATA [yes, no: +(no)]:

If TYPE is any BNS-2000 VCS module except "frm", "tsmt1", or "x75" and
if HOURLY REPORT is "on" and node is not monitored by StarKeeper II NMS:
    PRINT [yes, no: +(no)]:

If the BNS-2000 VCS node is monitored by StarKeeper II NMS and if TYPE is "sdlc8" or "tsm8":
    DETAIL [low, high: +(low)]:

If the node is monitored by StarKeeper II NMS and if TYPE is "sdlc8" or "tsm8":
    DETAIL [low, high: +(low)]:
```

Parameters

This section contains explanations of parameters used in the **schedule measurements** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

DETAIL

If the BNS-2000 VCS node is monitored by *StarKeeper II NMS* and if **TYPE** is *sdlc8* or *tsm8*, specifies if the output is to show a limited amount of information (*low* detail) or more information (*high* detail).

HOURLY REPORT

Specifies if reports are to be scheduled on an hourly basis (*on*) or if they are not to be scheduled (*off*). Reports that are scheduled hourly are also reinitialized after the report is printed.

INCLUDE CRC ERROR DATA

If **TYPE** is *cpmml* or *samml*, specifies if (yes or no) cyclic redundancy check (CRC) error data is to be included.

PRINT

For BNS-2000 nodes, if **TYPE** is any module except *frm*, *frm-m2*, *x25p*, *tsmt1*, or *x75* and for BNS-2000 VCS nodes, if **TYPE** is any module except *frm*, *tsmt1*, or *x75*; if **HOURLY REPORT** is *on*; and if node is not monitored by *StarKeeper II NMS*: If yes is specified, the reports will automatically be printed. If no is specified, measurements are still collected, but not printed.

TYPE

Specifies the scheduled measurements report type to be *bsc3270*, *concentrator*, *connections*, *cpmml*, *dkap*, *frm*, *frm-m2*, *lpm*, *sam*, *samml*, *sdlc8*, *trunk*, *tsm8*, *tsmt1*, *x25*, *x25p*, or *x75*.

```
CC0> schedule
OBJECTS [...measurements...]: measurements
TYPE [<module types>]: cpmml
HOURLY REPORT [on, off: +(on)]: +
INCLUDE CRC ERROR DATA [yes, no: +(no)]: yes
PRINT [yes, no: +(no)]: yes
<report output>
```

SCREEN 4-89. Prompted Entry: Scheduling CPMML Module Measurements*

```
CC0> schedule
OBJECTS [...measurements...]: measurements
TYPE [<module types>]: sdlc8
DETAIL [low, high: +(low)]: high
HOURLY REPORT [on, off: +(on)]: +
PRINT [yes, no: +(no)]: yes

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M schedule measurements on sdlc8 on 8
SDLC8 measurement reports scheduled, high detail included.
```

SCREEN 4-90. Prompted Entry: Scheduling SDLC8 Measurements*

* Node is monitored by *StarKeeper II* NMS.

schedule periodic_bill

The **schedule periodic_bill** command enables you to specify the current schedule (time and frequency) for collecting periodic billing reports for BSC3270 (SYNC8), bridge, CPM, DKAP FRM, FRM-M2, LPM, SAM, TSM8, TSM-T1, X.25, and X.75 modules. Use **verify schedule** to check the current schedule for collecting periodic billing reports.

Syntax

You can input **schedule periodic_bill** in prompted or one-line entry. Once the node is booted and measurements are initially scheduled, the defaults for **schedule periodic_bill** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

```
CC0> schedule
OBJECTS [...periodic_bill...]: periodic_bill
REPORT FREQUENCY [none, 6hour, 12hour, 24hour: +(none)]:

If REPORT FREQUENCY is not "none":
  INTERVAL START [0-23]:
  INTERVAL END [0-23]:
```

Parameters

This section contains explanations of parameters used in the **schedule periodic_bill** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

INTERVAL <START/END>

Specifies the beginning and ending interval hours, from 0 through 23, in which reports are to be collected. Data collection begins at the **INTERVAL START** time specified. The billing update is not output until one report frequency interval has elapsed. A report frequency of *6hour*, with identical **INTERVAL START** and **INTERVAL END** times, produces continuous reports every six hours.

If **REPORT FREQUENCY** is six hours (*6hour*), the **INTERVAL END** time must be the sum of modulo 24 (**INTERVAL START** plus a multiple report frequency of 6). For example, if **INTERVAL START** is 7, **INTERVAL END** must be 13, 19, 1, or 7.

REPORT FREQUENCY

Specifies how often, in *6hour*, *12hour*, *24hour* periods, reports are to be collected; or the word *none*, meaning reports are not to be collected.

schedule periodic_bill

```
CC0> schedule
OBJECTS [...periodic_bill...]: periodic_bill
REPORT FREQUENCY [none, 6hour, 12hour, 24hour: +(none)]: 12hour
INTERVAL START [0-23]: 12
INTERVAL END [0-23]: 12
<report output>
```

SCREEN 4-91. Prompted Entry: Scheduling Periodic Billing Reports

```
CC0> schedule periodic_bill 12hour 12 12
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  schedule periodic_bill 12hour 12 12
    Periodic Billing reports scheduled.
CC0>
```

SCREEN 4-92. One-line Entry/Output: Scheduling Periodic Billing Reports

verify schedule

The output of the **verify schedule** command enables you to check the time and frequency in which all measurements and periodic billing reports are scheduled to be collected and, if applicable, printed. Measurements reports can be scheduled with **schedule measurements** for BSC3270 (SYNC8), CPMML/CPMML-HS, DKAP, FRM, FRM-M2, LPM, SAM, SAMML, SDLC8, Trunk, TSM8, TSM-T1, X.25, X.25P, and X.75 modules, along with concentrators and connections. For BNS-2000 nodes, periodic billing reports can be scheduled with **schedule periodic_bill** for CPM, FRM, FRM-M2, TSM8, TSM-T1, X.25, and X.75 modules. For BNS-2000 VCS nodes, periodic billing reports can be scheduled with **schedule periodic_bill** for BSC3270 (SYNC8), CPM, FRM, LPM SAM, TSM8, and TSM-T1 modules.

Syntax

You can input **verify schedule** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...schedule...]: schedule
```

Parameters

None.

```
CC0> verify
OBJECTS [...schedule...]: schedule
<report output>
```

SCREEN 4-93. Prompted Entry: Verifying the Reporting Schedule


```
CC0> verify schedule
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify schedule
  BSC3270 reports scheduled: hourly.
  AI reports are NOT scheduled: hourly.
  Concentrator reports scheduled: hourly.
  Connection reports scheduled: hourly.
  CPM-ML reports are NOT scheduled.
  DKAP reports scheduled: hourly.
  LPM reports are NOT scheduled.
  FRM reports are NOT scheduled.
  FRM-M2 reports are scheduled: hourly.
  GAR reports are NOT scheduled.
  Periodic Billing reports are NOT scheduled.
  SAM reports are NOT scheduled.
  SAMML reports are NOT scheduled.
  SDLC8 reports are NOT scheduled.
  Trunk reports are NOT scheduled.
  TSM8 reports are NOT scheduled.
  TSMT1 reports are NOT scheduled.
  X25P reports are NOT scheduled.
  X25 reports are NOT scheduled.
  X75 reports are NOT scheduled.
CC0>
```

SCREEN 4-94. One-line Entry/Output: Verifying the BNS-2000 Reporting Schedule*

* Node is monitored by *StarKeeper* II NMS.

System Responses

This section contains system responses for **schedule measurements** and **schedule periodic_bill**. It is organized by the key phrase that prefaces the response.

Other than its command output, **verify schedule** does not have any associated system responses.

COMMAND FAILED:

Could not <open/read> /etc/sysgen file.

The command processor could not locate, open, or read the file containing report scheduling information.

Write to /etc/sysgen file failed.

The command processor was unable to write to the */etc/sysgen* file.

Use StarKeeper II NMS to schedule the measurement report.

Measurements reports cannot be scheduled via the node system console; they must be scheduled via the *StarKeeper II* NMS console.

INPUT ERROR:

Not an Allowed Value:

The value entered is prohibited or an error.

Parameter Out of Range:

A time entered for the scheduled reports was outside the hourly range selected.

Report frequency and interval not compatible:

The scheduled time of report does not fall within the selected interval.

NO KEY PHRASE:

<type> measurements reports scheduled, not formatted for StarKeeper NMS

Measurements reports were scheduled, but the node was not specified to be monitored by *StarKeeper II* NMS. Since this module's (<type>) scheduled measurements reports are only output in machine-readable form, they are not output. To specify the node as one monitored by *StarKeeper II* NMS and thereby have reports formatted by *StarKeeper II* NMS, see **enter node** or **change node**.

<type> measurements reports scheduled.

Measurements reports were scheduled to be collected for the specified module type. If the node is not monitored by *StarKeeper II* NMS, the measurements are automatically generated. If the node is monitored by *StarKeeper II* NMS, the measurements are scheduled, stored on disk for one measurements interval, and requested via *StarKeeper II* NMS.

NO KEY PHRASE: *(continued)*

<type> measurements reports scheduled, CRC error data <not> included.

Measurements reports were scheduled to be collected for the CPMML/CPMML-HS or SAMML and cyclic redundancy check error data can optionally be included. If the node is not monitored by *StarKeeper II* NMS, the measurements are automatically generated. If the node is monitored by *StarKeeper II* NMS, the measurements are scheduled, stored on disk for one measurements interval, and requested via *StarKeeper II* NMS.

<type> measurements reports scheduled, <high/low> detail included.

For a BNS-2000 VCS node that is monitored by *StarKeeper II* NMS, measurements reports were scheduled to be collected for the SDLC8 or TSM8 with high or low detail. These measurements are stored on disk for one measurements interval and can be sent to *StarKeeper II* NMS in machine-readable form.

<type> measurements reports scheduled.

Reports will not be printed.

Use DMEAS to display the saved measurements.

For a node that is not monitored by *StarKeeper II* NMS, measurements reports were scheduled to be collected for the specified module type, but they are not to be printed. Use **dmeas** to view collected measurements.

<type> measurements reports scheduled, CRC error data <not> included

Reports will not be printed.

Use DMEAS to display the saved measurements.

For a node that is not monitored by *StarKeeper II* NMS, measurements reports were scheduled to be collected with or without cyclic redundancy check error data for the CPMML/CPMML-HS or SAMML, but they are not to be printed. Use **dmeas** to view collected measurements.

shelf command set (BNS-2000 only)

The following commands are related to the **shelf** command set.

Administration	Operation	Maintenance	Related Objects
change shelf delete shelf enter shelf verify shelf	remove shelf restore shelf	diagnose shelf dmeas shelf** dstat shelf	node* schedule

* This object should be entered before configuring a shelf in the database.

** On-demand measurements are available for the Series M1 Shelf only.

change shelf (BNS-2000 only)

The **change shelf** command enables you to modify information previously entered into the database for any shelf. This information includes comment information for Series M2 Switch Shelves, and comment and link measurements data for Series M1 Control Shelves.

The shelf can remain in service while information is being changed. If the shelf is in service, the designated change takes effect immediately; if the shelf is out of service, the designated change does not take effect until the shelf is restored to service.

Syntax

You can input **change shelf** in prompted entry only. The command syntax for **enter shelf** and **change shelf** are similar. The **SHELF TYPE** parameter cannot be changed.

The defaults for **change shelf** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

Parameters

Except for being able to specify comment information for Series M2 Switch Shelves, and link measurements and comment information for Series M1 Control Shelves, the parameter definitions for **change shelf** are the same as those for **enter shelf**.

```
CC0> change
OBJECTS [...shelf...]: shelf
SHELF NUMBER [0-7]: 1
COMMENT [up to 60 chars double quoted, none: +(none)]:
"Extension Shelf"
"Extension Shelf, Room 333"
SHELF NUMBER [0-7]: 
CC0>
```

SCREEN 4-95. Prompted Entry: Changing Series M2 Extension Shelf Information

```
CC0> change
OBJECTS [...shelf...]: shelf
SHELF NUMBER [0-7]: 6
ENABLE LINK MEASUREMENTS FOR THIS SHELF [yes, no: +(no)]: yes
COMMENT [up to 60 chars double quoted, none: +(none)]:
"Port Complex"
"_"
SHELF NUMBER [0-7]: 
CC0>
```

SCREEN 4-96. Prompted Entry: Changing Series M1 Port Shelf Information

delete shelf (BNS-2000 only)

The **delete shelf** command enables you to eliminate information regarding a shelf and its associated link from the database. Before shelf information can be deleted, the shelf must be taken out of service with **remove shelf**. All attached modules must be removed from service and their information must be deleted from the database before shelf information can be deleted.

In addition, information regarding shelf 0, which houses the switch/switches, and the shelf which houses the active Control Computer cannot be deleted. Information regarding the standby Control Computer can only be deleted using **change node**.

For example, the standby Control Computer can be eliminated by responding *none* at the **change node** prompt: **CONTROL COMPUTER 1 ADDRESS**. The original module address occupied by the standby Control Computer becomes that in an ordinary Series M1 Port Shelf. Or, at the same prompt, the standby Control Computer can be reassigned to any Series M1 Control Shelf. In either instance, any configured modules residing in the shelf can be removed from service and their information can be deleted; then the standby Control Computer can be removed from service and its information can be deleted.

Syntax

You can input **delete shelf** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]:
```

Parameters

Refer to the parameter definitions supplied in **enter shelf**.

```
CC0> delete
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]: 1
CC0>
```

SCREEN 4-97. Prompted Entry: Deleting Shelf Information

```
CC0> delete shelf 1
```

SCREEN 4-98. One-line Entry: Deleting Shelf Information

diagnose shelf (BNS-2000 only)

The **diagnose shelf** command enables you to initiate loopback tests* for the Series M2 Extension Shelf, Series M1 Port Shelf, or the Series M1 Control Shelf housing the standby Control Computer. The **diagnose shelf** command cannot be executed on the Series M2 Switch Shelf or the Series M1 Control Shelf housing the active Control Computer. (The Series M1 Control Shelf containing the active Control Computer can be diagnosed using the **run /diag/ctrm_cim** command at the **LOADER>** prompt.)

Since the five loopback tests intended for the Series M1 Shelves (including the shelf housing the active Control Computer) are destructive, the shelf must be taken out of service before invoking **diagnose shelf**. Once testing is completed, the shelf must be manually brought back into service with **restore shelf**.

Each Series M1 Shelf loopback test begins and ends at the Control Computer, and extends to the loopback point designated for the specified test type. Begin testing by running the loopback test involving the shortest data transmission path. If this test fails, a fault exists in this transmission path. If the test passes, continue to run loopback tests on increasingly larger portions of the transmission path. If any test fails, the trouble lies in the portion of the transmission path tested. These diagnostics are designed to isolate hardware faults to the smallest replaceable unit (such as an I/O board or connecting fiber optic link).

Unlike the tests for the Series M1 Shelves, the loopback test for the Series M2 Extension Shelf is nondestructive; therefore, the Series M2 Extension Shelf can be in service or out of service when **diagnose shelf** is invoked. The loopback test for the Series M2 Extension Shelf begins and ends at the Control Computer. It extends from the ICCIOB, to the connecting cable, and to the ECCIOB of the extension shelf. If this test fails, remove the shelf from service, replace the connecting cable and the ECCIOB one at a time, and repeat the test to isolate any faults.

Regardless of which shelf is being tested, if the shelf is removed from service before testing, all in-service modules residing in that shelf are automatically put in the ready-for-service state, interrupting all calls in progress.

Syntax

You can input **diagnose shelf** in prompted or one-line entry.

```
CC0> diagnose
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]:
```

For a Series M1 Port Shelf or a Series M1 Control Shelf housing the standby Control Computer:

```
TEST TYPE [local_cim, cim_iob, external_cim, ctrm_iob, remote_ctrm:
+(local_cim)]:
```

* Loopback tests and loopback connectors are referred to as *loop-around* tests and connectors in the software.

Syntax (*continued*)

For a Series M1 or Series M2 Shelf:

REPETITIONS [1-1000; "c" for continuous: +(1)]:

If TEST TYPE is "external_cim":

INFO: Replace the fiber optic link connection on the CIM I/O board with a loop-around connector; or place a loop-around connector on the remote end of the fiber link at the CTRM I/O board.

CONTINUE TESTING [yes, no: +(yes)]:

<test results>

BE SURE TO REPLACE THE LOOPBACK CABLE/DEVICE.

If TEST TYPE is "remote_cim":

IT IS RECOMMENDED THAT THE local_cim TEST BE RUN FIRST.

If shelf is a Series M1 Shelf, command loops to TEST TYPE prompt.

Parameters

This section contains explanations of parameters used in the **diagnose shelf** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CONTINUE TESTING

Specifies whether (yes or no) diagnostic testing should be continued.

REPETITIONS

Specifies whether a particular test is to be run 1 to 1000 times (inclusive) or if continuous (c) testing should occur. Continuous testing can be stopped by pressing .

TEST TYPE

For a Series M1 Shelf only, specifies the type of test to be executed. All tests begin and end at the Control Computer.

- *cim_iob*
This extends from the local CIM board to the CIM I/O board at the fiber interface. (It does not test the interface's fiber optic drivers.) If this test fails, but the local_cim test passes, replace the CIM I/O board.
- *ctrm_iob*
This test extends from the local CIM board and its I/O board, through the connecting fiber link, to the CTRM I/O board on the remote end. If this test fails, but the local_cim, cim_iob, and external_cim tests pass, replace the CTRM I/O board.
- *external_cim*
This test extends from the local CIM board and its I/O board, through a loopback connector on the CIM I/O board or to a loopback connector on the remote end of the fiber link at the CTRM I/O board.

If this test fails, but local_cim and cim_iob tests pass, replace the CIM I/O board if the failure occurs when a loopback connector is installed on the CIM I/O board. Replace the fiber optic link if the failure occurs when a loopback connector is installed on the fiber link facility at the CTRM I/O board.

Parameters *(continued)*

- *local_cim*
This test initiates a CIM self-test to verify the entire data path except for the backplane bus and receivers and the fiber optic transceiver. It then begins a loopback test which extends to the local CIM board. If this test fails, replace the CIM board.
- *remote_ctrm*
This test extends from the local CIM board and its I/O board, through the fiber link, to the CTRM board and its I/O board on the Series M1 Shelf bus interface. If this test fails, but all other tests pass, replace the CTRM board.

For the remaining parameter, refer to the definition supplied in **enter shelf**.

```
CC0> diagnose
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]: 1
REPETITIONS [1-1000; "c" for continuous: +(1)]: 1
<test results>
CC0>
```

SCREEN 4-99. Prompted Entry: Running Series M2 Extension Shelf Diagnostics

```

CC0> diagnose
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]: 6
TEST TYPE [local_cim, cim_iob, external_cim, ctrm_iob, remote_ctrm:
          +(local_cim)]: +
REPETITIONS [1-1000; "c" for continuous: +(1)]: +
...
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M diagnose shelf 6 local_cim 1
  LOOP-AROUND DIAGNOSTIC SUCCEEDED.

TEST TYPE [local_cim, cim_iob, external_cim, ctrm_iob, remote_ctrm:
          +(local_cim)]: external_cim
REPETITIONS [1-1000; "c" for continuous: +(1)]: +
INFO: Replace the fiber optic link connection on the CIM I/O board
      with a loop-around connector; or place a loop-around connector on
      the remote end of the fiber link at the CTRM I/O board.

CONTINUE TESTING [yes, no: +(yes)]: +
<test results>
TEST TYPE [local_cim, cim_iob, external_cim, ctrm_iob, remote_ctrm :
          +(local_cim)]: 
CC0>

```

SCREEN 4-100. Prompted Entry: Running Series M1 Port Shelf Diagnostics

dmeas shelf (BNS-2000 only)

The **dmeas shelf** command enables you to generate on-demand measurements reports for the Series M1 Control Shelf and the Series M1 Port Shelf. These reports contain traffic, performance, and utilization measurements for the specified shelf.

For each on-demand report, the starting and ending time for the measurements collection interval is displayed on the date stamp. This interval can range from one minute (if the interval specified was *current*) to a full hour (if the interval specified was *previous*). The peak measurements interval for which data is displayed is a five-minute period during which the most activity occurred in the previous hour (the previous interval).

Measurements data can also be gathered for the link servicing the shelf, if the response to the **ENABLE LINK MEASUREMENTS FOR THIS SHELF** prompt in **enter shelf** or **change shelf** is yes. These reports are scheduled with **schedule measurements** and are automatically generated in machine-readable format only.

Syntax

You can input **dmeas shelf** in prompted or one-line entry.

```
CC0> dmeas
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]:
INTERVAL [current, previous: +(current)]:
```

Parameters

The **SHELF NUMBER** parameter definition for **dmeas shelf** is the same as that for the Series M1 Shelf in **enter shelf**.

INTERVAL

Specifies if the on-demand report is to be printed for the *current* or *previous* reporting interval. The current interval includes those measurements accumulated since the previous scheduled report was generated; or if a report was not scheduled, those measurements accumulated since the module was last reset. Conversely, the previous interval includes those measurements accumulated prior to the current interval.

```
CC0> dmeas
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]: 6
INTERVAL [current, previous: +(current)]: +
<report output>
```

SCREEN 4-101. Prompted Entry: Displaying Series M1 Shelf Measurements

```
CC0> dmeas shelf 6 current
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dmeas shelf 6 current

SHELF NUMBER: 6 <yy-mm-dd> <hh:mm> ----> <hh:mm>

TO-NODE-FIFO TO-NODE-FIFO FM-NODE-FIFO FM-NODE-FIFO
PEAK UTILIZ OVERFLOW PEAK UTILIZ OVERFLOW
<50% 0 0% 0

LINE SPEED: 8.64 Mb/s DUPLEX: FULL

<-----RECEIVED BY PORT FM LINE-----> <---TRANSMITTED FM PORT TO LINE--->
LINE TOTAL FIBER PARITY LINE TOTAL FIBER
UTIL K BYTES K ENVELOPES ERRORS UTIL K BYTES K ENVELOPES
0% 0 0 0 0% 0 0

LOCAL SYNC REMOTE SYNC
LOST LOST
0 0
CC0>
```

SCREEN 4-102. One-line Entry/Output: Displaying Current Interval Series M1 Shelf Measurements

Report Fields

The following section contains explanations of report fields that appear in the output of **dmeas shelf**.

FIBER K ENVELOPES

The number of k envelopes in the interval.

FM-NODE-FIFO OVERFLOW

The number of first-in/first-out overflow errors that occurred from the node during the interval.

FM-NODE-FIFO PEAK UTILIZ

Indicates how full the FIFO is.

LINE SPEED

The transmission speed on the link.

LINE UTILIZATION

The percentage of traffic on the link compared to the capacity of the link.

LOCAL SYNC LOST

The number of times the fiber link receiver on the local module lost synchronization during the interval. For a Series M1 Shelf, the local module is the CIM.

Report Fields *(continued)*

LOST OPTICS

The number of times the module receiver lost the optical signal within the interval.

PARITY ERROR

The number of fiber protocol violations that occurred in the data received from the remote end within the interval.

REMOTE SYNC LOST

The number of times the fiber link receiver on the remote module lost synchronization during the interval.

SHELF NUMBER

The number range for a Series M1 Shelf is from 1 to 7.

SPEED

The speed on the link in megabits per second.

TO-NODE-FIFO OVERFLOW

The number of first-in/first-out overflow errors that occurred going to the node during the interval.

TO-NODE-FIFO PEAK UTILIZ

Indicates how full the FIFO is.

TOTAL K BYTES

The total number of kilobytes recorded during the interval.

dstat shelf (BNS-2000 only)

The **dstat shelf** command enables you to display information regarding the status of a particular shelf or all configured shelves. The command output includes module hardware data (displayed in **dstat module**) along with on-board software data. This output is useful to study system performance and problems.

Syntax

You can input **dstat shelf** in prompted or one-line entry.

```
CC0> dstat
OBJECTS [...shelf...]: shelf
SHELF NUMBER [0-7, all, +(all)]:
DETAIL [low, high: (+low)]:
```

Parameters

Except for being able to specify the word *all*, meaning every shelf configured, the **SHELF NUMBER** parameter definition for **dstat shelf** is the same as that for **enter shelf**.

DETAIL

Specifies if the output is to contain a limited amount of information (*low* detail) or more information (*high* detail).

```
CC0> dstat
OBJECTS [...shelf...]: shelf
SHELF NUMBER [0-7, all, +(all)]: 4
DETAIL [low, high, +(low)]: high
<report output>
```

SCREEN 4-103. Prompted Entry: Displaying High Detail Shelf Status

```
CC0> dstat shelf 4 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat shelf 4 high

***** SHELF 4 *****
SHELF TYPE      CABINET TYPE      SERVICE STATE      HARDWARE ERROR
cntrl           Modular           in                 30

LAST ALARM
5-volt power failure
Check +5 and -5 volt fuses; replace power supply <yy-mm-dd> <hh:mm>

ONLINE          ENABLED
yes             yes

----- HIGH DETAIL -----
COOLING        AMBIENT        POWER          5-VOLT
FAN            TEMP          SUPPLY         FUSES
good           good          good           good

LOOPBACK       BAD CTRM       TO-FIFO BUF    CRC          PROTOCOL
MODE           ACK           OVERFLOW       ERROR        MISMATCH
no            20           10             0            0

3/4 FULL       1/2 FULL      LOCAL          REMOTE
FM-BUF         TO-BUF        SYNC ER       SYNC ER
0              0             0             0

EXPECT         FULL          EMPTY          ACTUAL         ACTUAL         ACTUAL         EXPECT         EXPECT         EXPECT
TYPE           PACKETS       PACKETS        STAT1          STAT2          STAT3          STAT1          STAT2          STAT3
cntrl          972          0              1              24             10             1              10             03
CC0>
```

SCREEN 4-104. One-line Entry/Output: Displaying High Detail Status for a Series M1 Control Shelf

```

CC0> dstat shelf 6 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat shelf 6 high

***** SHELF 6 *****
SHELF TYPE      CABINET TYPE      SERVICE STATE      HARDWARE ERROR
port            Modular            in                  0

LAST ALARM
none

ONLINE          ENABLED
yes             yes

----- HIGH DETAIL -----
COOLING  AMBIENT  POWER      5-VOLT
FAN      TEMP     SUPPLY     FUSES
N/A      N/A      N/A        N/A

LOOPBACK  BAD CTRM   TO-FIFO BUF  CRC      PROTOCOL
MODE      ACK      OVERFLOW     ERROR    MISMATCH
no        0        0            0        0

3/4 FULL  1/2 FULL   LOCAL      REMOTE
FM-BUF    TO-BUF    SYNC ER    SYNC ER
0         0        0          0

EXPECT    FULL    EMPTY    ACTUAL   ACTUAL   ACTUAL   EXPECT   EXPECT   EXPECT
TYPE      PACKETS PACKETS  STAT1    STAT2    STAT3    STAT1    STAT2    STAT3
port      20      0        05       04       03       05       04       03

CC0>

```

SCREEN 4-105. One-line Entry/Output: Displaying High Detail Status for a Series M1 Port Shelf


```
CC0> dstat shelf 0 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat shelf 0 high

***** SHELF 0 *****

SHELF TYPE  SERVICE STATE
switch      in

LAST ALARM
Shelf fan speed low <yy-mm-dd> <hh:mm>

AVAIL
yes

----- HIGH DETAIL -----
COOLING  AMBIENT  POWER  5-VOLT
FANS     TEMP     SUPPLY  FUSES
failure  good     good    good

POWER USED
IN AMPS
17

EXPECT  FULL    EMPTY  ACTUAL  ACTUAL  ACTUAL  EXPECT  EXPECT  EXPECT
TYPE    PACKETS PACKETS STAT1   STAT2   STAT3   STAT1   STAT2   STAT3
switch  32263    0      300    40      240     0       0       0
CC0>
```

SCREEN 4-106. One-line Entry/Output: Displaying High Detail Status for a Series M2 Switch Shelf

```

CC0> dstat shelf 1 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat shelf 1 high

***** SHELF 1 *****
SHELF TYPE    SERVICE STATE
ext           out

LAST ALARM
none

AVAIL
no

----- HIGH DETAIL -----
COOLING  AMBIENT  POWER    5-VOLT
FAN      TEMP    SUPPLY    FUSES
failure  good    good      good

LOOPBACK  POWER USED
MODE      IN AMPS
no        0

EXPECT    FULL    EMPTY    ACTUAL    ACTUAL    ACTUAL    EXPECT    EXPECT    EXPECT
TYPE      PACKETS PACKETS  STAT1     STAT2     STAT3     STAT1     STAT2     STAT3
ext       2000    0       20       20       30       20       20       30
CC0>

```

SCREEN 4-107. One-line Entry/Output: Displaying High Detail Status for a Series M2 Extension Shelf

Report Fields

The following report field descriptions are those that appear for *every* variation of **dstat shelf**.

AMBIENT TEMP

The temperature measured in the shelf. If the temperature is less than 120°F (48.89°C), the status shown is *good*. If the temperature is greater than 120°F (48.89°C), the status shown is *failure*. If the shelf is out of service, the status *unknown* is displayed.

ACTUAL STAT1

The actual value of the first hardware status byte of the most recently received status packet for the given shelf.

ACTUAL STAT2

The actual value of the second hardware status byte of the most recently received status packet for the given shelf.

ACTUAL STAT3

The actual value of the third hardware status byte of the most recently received status packet for the given shelf.

Report Fields *(continued)*

BAD CTRM ACK

The number of missing remote module (CTRM) fiber protocol acknowledgments.

CABINET TYPE

Modular is displayed if the shelf is installed in a modular cabinet (a Series M1 Shelf). If the shelf is out of service, the status *unknown* is displayed.

COOLING FAN

The status of the cooling fans in the shelf. If any fan drops below a certain speed, a *failure* status is reported; otherwise, a *good* status is reported. If the shelf is out of service, the status *unknown* is displayed.

EMPTY PACKETS

The number of empty status packets received. (Empty packets are received when a module is not physically connected to a given shelf.)

ENABLED

For Series M1 Shelves only, shows a status of *yes* only if the shelf (CIM module) toggle switch is in the *enable* position.

EXPECT TYPE

The expected hardware type of the shelf in the specified shelf number. For an in-service shelf, the status of this field depends on administrator supplied information. For an out-of-service shelf, the status of this field is determined by status packet information only.

EXPECT STAT1

The expected value of the first hardware status byte for the given shelf.

EXPECT STAT2

The expected value of the second hardware status byte for the given shelf.

EXPECT STAT3

The expected value of the third hardware status byte for the given shelf.

FULL PACKETS

The number of full status packets received. (Full packets are received when a shelf is physically present in the given shelf slot.)

HARDWARE ERROR

The total number of different shelf errors detected since the shelf has been in service.

LAST ALARM

The last alarm for the given shelf. This information, which is based on status packet data, is not stored across Control Computer reboots.

LOCAL SYNC ER

The total number of Series M1 Shelf errors attributed to the fiber receiver losing synchronization since the shelf has been in service.

Report Fields *(continued)***LOOPBACK MODE**

For the Series M2 Extension Shelf and the Series M1 Port and Control Shelves, indicates whether (*yes* or *no*) the shelf is in loopback mode.

ONLINE

Indicates whether (*yes* or *no*) the green LED on the CIM is lit. This information is retrieved from status packet data.

POWER SUPPLY

Indicates a status of *good* or *failure* depending on whether a failed power supply is detected. If the shelf is out of service, the status *unknown* is displayed.

POWER USED IN AMPS

For Series M2 Shelves, the actual total power consumed in AMPS.

PROTOCOL MISMATCH

The total number of protocol compatibility errors detected since the shelf has been in service.

REMOTE SYNC ER

The total number of times the remote fiber receiver lost synchronization since the shelf has been in service.

SERVICE STATE

The current service state of the shelf is in service (*in*) or out of service (*out*). This actual state is determined from status packet data.

SHELF TYPE

The actual shelf type, which is retrieved from status packet data and is initialized to empty by the software. Possible shelf types displayed are *port* (Series M1 Port Shelf), *cntrl* (Series M1 Control Shelf), *ext* (Series M2 Extension Shelf), or *switch* (Series M2 Switch Shelf).

TO FIFO BUF OVERFLOW

The total number of first-in/first-out buffer overflow errors that occurred since the shelf has been in service.

1/2 FULL TO BUF

The number of first-in/first-out buffer high water marks that were transmitted to the node and that were reached since the shelf has been in service. The mark is set to 1/2 full or 4KB.

3/4 FULL FM BUF

The number of first-in/first-out buffer high water marks that were transmitted from the node and that were reached since the shelf has been in service. The mark is set to 3/4 full or 192K.

5-VOLT FUSES

Shows a status of *good* or *failure* depending on the state of the 5-volt fuses in the shelf. If the shelf is out of service, the status *unknown* is displayed.

enter shelf (BNS-2000 only)

The **enter shelf** command enables you to add initial configuration information pertaining to Series M2 Extension Shelves (*extension*) or Series M1 Port Shelves (*port*) to the database. These shelves, which can house high and low speed modules, cannot be used to house the node switching complex or the Control Computers. The switching complex is housed in a Series M2 Switch Shelf (shelf 0) and the active Control Computer is housed in a Series M1 Control Shelf. These two shelves, which form the minimum node configuration, are added to the system automatically. Any redundant Control Computer that is to function as the standby is added to the database with **enter node**.

Series M1 Port Shelves can be entered as any shelf number between 1 and 7. However, Series M2 Extension Shelves are restricted to shelf numbers 1, 2, and 3, and if the node is equipped with Xswitches, shelf numbers 6 and 7. Therefore, when entering Port Shelves, shelf numbers 4 and 5 should be used first, since they cannot be used for Extension Shelves. Next, shelf numbers 6 and 7 should be used, and finally, shelf numbers 1, 2, and 3. This ordering will facilitate Series M2 Extension Shelf expansion.

When a Series M1 Port Shelf is specified, its Carrier Interface Module (CIM, CMA2) and corresponding Clock/Trunk/Repeater Module (CTRM) are added to the database. The system automatically configures the shelf as a port shelf.

When a Series M2 Extension Shelf is specified, its Extension Cable Clock Input/Output Board (ECCIOB) is added to the database. Like the Series M1 Port Shelf, the system automatically configures the Series M2 Shelf as an extension shelf. Only Series M2 Shelves can house high speed modules.

All shelf information must be entered before information regarding the modules residing in the shelves can be entered.

Syntax

You can input **enter shelf** in prompted entry only. The prompting sequence depends on your response to the **SHELF TYPE** prompt. Defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...shelf...]: shelf
SHELF TYPE [extension, port]:
```

If SHELF TYPE is "extension" and the node is equipped with extended switches:

```
SHELF NUMBER [1-3, 6, 7]:
```

If SHELF TYPE is "extension" and the node is not equipped with extended switches:

```
SHELF NUMBER [1-3]:
```

```
COMMENT [up to 60 chars double quoted, none: +(none)]:
```

Command loops to SHELF NUMBER prompt.

If SHELF TYPE is "port":

```
INFO: Enter port shelf in shelf numbers 4, 5 if extension shelf will be configured.
```

```
SHELF NUMBER [1-7]:
```

```
ENABLE LINK MEASUREMENTS FOR THIS SHELF [yes, no: +(no)]:
```

```
COMMENT [up to 60 chars double quoted, none: +(none)]:
```

Command loops to SHELF NUMBER prompt.

Parameters

This section contains explanations of parameters used in the **enter shelf** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

COMMENT

An optional string of 1 to 60 characters, enclosed in double quotation marks, that contains useful administrative information.

ENABLE LINK MEASUREMENTS FOR THIS SHELF

If **SHELF TYPE** is *port*, specifies whether (*yes* or *no*) link traffic and error measurements data for the link servicing the Series M1 Shelf should be enabled. To obtain a report, shelf measurements must be scheduled with **schedule measurements**.

SHELF NUMBER

A number from 1 to 7 specifying the number of the shelf being configured. Only a single shelf number can be specified. The system automatically configures the Series M2 Switch Shelf in shelf 0. The system automatically configures the Series M1 Control Shelf, which houses the active Control Computer.

If **SHELF TYPE** is *extension* and node is equipped with extended switches, the shelf number range can be 1, 2, 3, 6, or 7. If **SHELF TYPE** is *extension* and the node is not equipped with extended switches, the shelf number range is 1 to 3. This number is determined by the Series M2 Extension Shelf cable connection location on the Extension Cable/Clock Input/Output Board (CNA7).

If **SHELF TYPE** is *port*, the shelf number range is 1 to 7. This number is the module address of its Carrier Interface Module (CIM) on the Series M2 Switch Shelf. If an *extension* shelf is being added, configure the *port* shelf in slots 4 to 7.

SHELF TYPE

Specifies that the type of shelf to be configured is a Series M2 Extension Shelf (*extension*) or a Series M1 Port Shelf (*port*). (Series M2 Switch Shelves and Series M1 Control Shelves, which house the switching complex and active Control Computer, are configured by the system automatically.)

enter shelf

```
CC0> enter
OBJECTS [...shelf...]: shelf
SHELF TYPE [extension, port]: extension
SHELF NUMBER [1-3]: 1
COMMENT [up to 60 chars double quoted, none: +(none)]:
"Extension Shelf"
SHELF NUMBER [1-3]: 
CC0>
```

SCREEN 4-108. Prompted Entry: Entering Series M2 Extension Shelf Information

```
CC0> enter
OBJECTS [...shelf...]: shelf
SHELF TYPE [extension, port]: port
INFO: Enter port shelf in shelf numbers 4,5 if extension shelf will be configured.
SHELF NUMBER [1-7]: 6
ENABLE LINK MEASUREMENTS FOR THIS SHELF [yes, no: +(no)]: +
COMMENT [up to 60 chars double quoted, none: +(none)]:
"Port Complex"
SHELF NUMBER [1-3]: 
CC0>
```

SCREEN 4-109. Prompted Entry: Entering Series M1 Port Shelf Information

remove shelf (BNS-2000 only)

The **remove shelf** command enables you to remove a specified shelf and its associated link from service. When a shelf is removed from service, all in-service attached modules are automatically removed from service and put in the ready-for-service state. The following conditions apply:

- A shelf housing a session maintenance trunk module that is currently in rerouting or reverting status cannot be removed from service.
- The Series M2 Switch Shelf (*shelf 0*) and the Series M1 Control Shelf, which houses the active Control Computer, cannot be removed from service.
- The shelf housing the standby Control Computer can be removed from service along with any Series M2 Extension Shelf or Series M1 Port Shelf.

Syntax

You can input **remove shelf** in prompted or one-line entry.

```
CC0> remove
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]:
```

Parameters

Refer to the parameter definitions supplied in **enter shelf**.

```
CC0> remove
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]: 1
CC0>
```

SCREEN 4-110. Prompted Entry: Removing a Shelf from Service

```
CC0> remove shelf 1
```

SCREEN 4-111. One-line Entries: Removing a Shelf from Service

restore shelf (BNS-2000 only)

The **restore shelf** command enables you to put an out-of-service shelf and its associated link into service initially or after it has automatically or manually been removed from service. Once a shelf has been restored to service, all attached modules in the ready-for-service state are automatically restored to service. The following conditions apply.

- The system automatically restores the Series M2 Switch Shelf (*shelf 0*) and the Series M1 Control Shelf, which houses the active Control Computer, when it is booted.
- The shelf housing the standby Control Computer is configured with **enter node** or **change node** and is marked as *in service* when command execution has completed. To bring up the shelf and the standby Control Computer, the node must be rebooted. The system does not have to be rebooted in order to bring up the standby Control Computer. If the shelf housing the standby Control Computer was manually removed from service, it can be brought back into service with **restore shelf**.
- When restoring a Series M1 Port Shelf, the CIM/CTRM connection must exist.
- When restoring a Series M2 Extension Shelf, the ICCIOB/ECCIOB connection must exist.

Syntax

You can input **restore shelf** in prompted or one-line entry. Pressing during the prompting sequence terminates the command process. Pressing after the command execution has commenced does not terminate the restoration process.

```
CC0> restore
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]:
```

Parameters

Refer to the parameter definitions supplied in **enter shelf**.

```
CC0> restore
OBJECTS [...shelf...]: shelf
SHELF NUMBER [1-7]: 1
CC0>
```

SCREEN 4-112. Prompted Entry: Restoring a Shelf to Service

```
CC0> restore shelf 1
```

SCREEN 4-113. One-line Entries/Output: Restoring a Shelf to Service

verify shelf (BNS-2000 only)

The output of the **verify shelf** command enables you to check information entered in the database for a specified shelf or all shelves and any housed modules. shelves housing the active and standby Control Computers are noted in the **SHELF TYPE** report field.

Syntax

You can input **verify shelf** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...shelf...]: shelf
SHELF NUMBER [0-7: +(all)]:
```

Parameters

Except for being able to specify the word *all*, meaning every shelf, the **MODULE ADDRESS** parameter definition for **verify shelf** is the same as that for **enter shelf**.

```
CC0> verify
OBJECTS [...shelf...]: shelf
SHELF NUMBER [0-7: +(all)]: +
<report output>
```

SCREEN 4-114. Prompted Entry: Verifying Shelf Information

```
CC0> verify shelf +
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify shelf +

SHELF NUMBER: 1
SHELF TYPE: extension
SERVICE STATE: in
POWER SUPPLY: 121 amps
COMMENT:

MODULE  TYPE      SRVC
  20    gar       out (manual)
  22    gar       out (manual)
```

SCREEN 4-115. One-line Entry/Output: Verifying Shelf Information

One-line Entry/Output: Verifying Shelf Information *(continued)*

```

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify shelf +

SHELF NUMBER: 5
SHELF TYPE: port
SERVICE STATE: in
ENABLE MEASUREMENT: no
COMMENT:

MODULE  TYPE      SRVC
  82    trkhs      in
  83    ty12       in
  84    sft        out (manual)
  85    ty12       out (manual)
  86    frm        out (fault)

CC0>

```

Report Fields

This table correlates each report field heading shown in the output of **verify shelf** to the parameter for which you are prompted in **enter shelf** or **change shelf**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	Corresponding Parameter Name
COMMENT	COMMENT
ENABLE MEASUREMENT	ENABLE MEASUREMENTS FOR THIS SERIES M1 SHELF
EXTENSION(S)	None: all extension shelves configured in database
MODULE	None: module address of the module in the shelf
POWER SUPPLY	None: automatically configured in the database
SERVICE STATE	None: shelf service state (in, out)
SHELF NUMBER	SHELF NUMBER
SHELF TYPE	SHELF TYPE
SRVC	None: module service state (in, out, rfs)
TYPE	None: module type housed in shelf

System Responses

This section contains system responses for the **shelf** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

No more system resources. Reboot the node and try again.

Diagnostics could not complete due to insufficient system resources. Reboot the node to free system resources.

Insufficient switch memory. Shelf <num> cannot be diagnosed.

Diagnostics failed because of insufficient switch memory. Retry later or remove other module(s) from service to free up switch memory.

Measurements are not being collected for shelf <num>.

Measurements collection has not been enabled for the specified Series M1 Shelf.

Shelf measurement is not scheduled.

Measurements data for the Series M1 Shelf has not been scheduled with **schedule measurements**.

Slot contains module <mod type>, <mod type> expected.

The CIM has been replaced by another board of <type> after the **SHELF NUMBER** prompt, but before the loopback test actually began.

Slot is empty.

The CIM has been removed from the slot after the **SHELF NUMBER** prompt, but before the loopback test actually began.

System error.

The **diagnose** command fails due to system errors. Contact your local support organization for the reason of failure.

DIAGNOSTICS:

DELETE KEY HIT. PLEASE WAIT.

The key was pressed while running loopback tests. Testing is terminated. If Series M1 Shelf tests were running, the system loops to the **TEST TYPE** prompt. If Series M2 Shelf tests were running, the system exits and returns to the **CC0>** prompt.

DIAGNOSTIC FAILED: CIM failed self-test.

Replace the CIM module board.

DIAGNOSTIC FAILED: CIM failed to assume proper command decoder state.

Replace the CIM module board.

DIAGNOSTIC FAILED: No status packets response from CTRM.

CHECK THE COMMUNICATION PATH BETWEEN CIM AND CTRM.

The local CIM cannot communicate with the remote CTRM for the **ctrm_job** test or the **remote_ctrm** test. Make sure the CTRM is properly installed and enabled, the CTRM I/O board loopback switch is not set, and its fiber link is properly connected.

DIAGNOSTICS: *(continued)*

LOOP-AROUND DIAGNOSTIC FAILED: Cannot establish loop-around state.

A hardware problem might exist for the designated loopback point (CIM Interface board or I/O board, CTRM Interface board or I/O board, or ECCIOB).

LOOP-AROUND DIAGNOSTIC FAILED: <n> errors in <x> transmissions.

One or more errors occurred during loopback testing. The number of loopbacks in which the returned text fails to match the transmitted text is <n>; the total number of loopbacks completed is <x>.

LOOP-AROUND DIAGNOSTIC FAILED: <htype> is stuck in loop-around state.

A hardware problem could exist for the hardware type indicated (CIM, CTRM, or ECCIOB).

LOOP-AROUND DIAGNOSTIC SUCCEEDED.

All requested loopback repetitions completed and no errors occurred.

INFO:

Enter port shelf in shelf numbers 4,5 if extension shelf will be configured.

If Series M1 Shelves are to be configured and coexist with a Series M2 Shelf, the Series M1 Shelf should reside in shelves 4 or 5.

Module <mod addr> is ready for service (rfs) until shelf is restored.

The module remains in the ready-for-service state until its shelf is restored to service.

When the shelf is restored to service, the module will be in the in-service state.

Replace the fiber optic link connection on the CIM I/O board with a loop-around connector; or place a loop-around connector on the remote end of the fiber link at the CTRM I/O board.

When running diagnostics, a loopback connector must be installed before testing can proceed.

INPUT ERROR:

Connected components must be deleted before deleting shelf <num>.

Information regarding the modules housed in the specified shelf must be deleted before shelf information can be deleted.

Control shelf <num> cannot be deleted.

Information regarding the shelf housing the active or standby Control Computer cannot be eliminated from the database.

**Corresponding slot number in shelf 0 must be available;
<mod type> is already entered in module address <mod addr>.**

In order to enter a Series M1 Shelf, the slot number in Shelf 0 that corresponds to the shelf number being entered must be available for a CIM module.

Not an Allowed Value.

The parameter value specified is not valid.

INPUT ERROR: *(continued)***Parameter out of Range: <num>**

The parameter specified is not within the allowed range.

Physical slot does not exist.

The specified slot is available.

Series M1 Shelf <num> is not present, slot <num> contains <mod type>.

The Series M1 Shelf is configured in the database, but a wrong module type is physically occupying the CIM slot.

Series M1 shelf <num> must be out of service to run diagnostics.

The Series M1 Shelf cannot be in service when diagnostics are running.

Series <type> module cannot be administered in a series <type> shelf.

The module type being entered cannot be configured in the specified shelf type.

Shelf cannot reside on concentrators.

The specified module address is incorrect. The module address takes the form: <mod addr>; where: *mod addr* is the node slot that the module occupies.

**Shelf must exist before administering a module.
attempting to administer a <type>.**

The administration order or method is incorrect.

Shelf <num> is not in service.

Measurements were requested for the specified shelf, which is not currently in service.

Shelf <num> does not exist.

Measurements were requested for the specified shelf, which has not been installed or administered in the database.

Shelf <num> is already entered.

The specified shelf number was already administered.

Shelf <num> is not configured.

The specified shelf number was not administered.

Shelf <num> is not a port.

Measurements were requested for a Series M2 Shelf. Measurements can only be requested for Series M1 Shelves.

Shelf <num> is not present, <type> expected.

The indicated shelf contains a module type other than the one specified.

Shelf <num> must be out of service to delete.

The specified shelf must be removed from service before its database entries can be deleted.

The <extension/port> shelf can only be entered at SHELF NUMBER 1 to <3/7>.

The specified shelves must reside in the shelf number range indicated in nodes that are not equipped with extended switches.

INPUT ERROR: *(continued)*

The <extension/port> shelf can only be entered at SHELF NUMBER 1 to <3,6, 7/7>.

The specified shelves must reside in the shelf number range indicated in nodes that are equipped with extended switches.

NO KEY PHRASE:

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file was removed from the disk.) Contact your local support group.

Shelf <num> is not physically present.

The specified shelf has not been installed.

REMOVE/RESTORE FAILED:

Active controller shelf <num> cannot be removed from service.

The Series M1 Control Shelf, which houses the active Control Computer, cannot be removed from service.

Cannot abort; <remove/restore> in progress.

The key was pressed while the command process could not be terminated.

Cannot communicate with shelf <num> hardware.

The CIM module is running a selftest or is the DIAG state.

Cannot get text file for shelf <num>.

The file containing information regarding the specified shelf could not be obtained.

Command timed out waiting for response from system. Service state of shelf <num> may have changed.

Because the command timed out the service state of the specified shelf might have changed.

Common equipment failure for shelf <num>. Check shelf equipment.

The module or modules which the specified shelf houses failed.

Inconsistent database entry for shelf <num>. Delete and re-enter.

The information in the database does not agree with that entered for the shelf numbered specified.

Local shelf equipment restore completed.

Modules on the shelf being restored.

The shelf restoration process includes two phases: the first phase is common equipment; the second phase is the modules.

REMOVE/RESTORE FAILED: *(continued)*

No switch memory available. Shelf <num> cannot be restored. Remove other modules first.

The Control Computer cannot allocate the amount of switch memory required because all switch memory has been allocated or it was fragmented by removing and restoring several modules. Remove and restore some modules, then retry the command later.

Restore of modules on the shelf <proceeding/will proceed in the background>.

The modules on the shelf are currently being or will currently be restored.

Shelf <num> is already <in/out of> service.

The specified shelf is already in the requested service state.

Shelf address <num> contains a <mod type/broken cim> module

The specified shelf number physically contains a module other than a CIM or the specified shelf contains a faulty CIM.

Software inconsistency (shelf <num>).

Software problems occurred. Call your local support group.

State discrepancy error between system processes.

Software problems occurred. Call your local support group.

System too busy to process shelf <num>. Try again later.

The system is currently too busy to process the remove/restore request. Retry the command in a few minutes.

Trunk <mod addr> in shelf <num> is rerouting/reverting. Try again later.

The specified shelf cannot be removed from service while a session maintenance trunk is rerouting data.

Unrecognized error code for shelf <num>.

Software problems occurred. Call your local support group.

<Remove/Restore> failed; could not send message to config.

The remove/restore process failed because it could not send a message to the configuration process.

WARNING:

Cannot <enable/disable> measurement for shelf <num>. Try again later.

The measurements of the indicated shelf cannot be enabled or disabled. Wait a while and retry the command.

Module <addr> could not send message to trunksig.

Software problems occurred. Call your local support group.

Measurement data for <type> <num> not initialized properly.

During the remove/restore process, the measurements interval for data collection was not initialized properly on the Series M1 Shelf. Measurements data might be incomplete or nonexistent.

Shelf <num> is sending messages to trunksig processes.

An attempt has been made to remove a session maintenance trunk from service. Trunk data will be rerouted to other trunks.

ssm4 command set (BNS-2000 only)

The SSM4 command set is used in Series M2 Configurations supporting Stratum 4 clocking in non-extended (standard) switch configurations.

The following commands are related to the **ssm4** command set.

Administration	Operation	Maintenance	Related Objects
change ssm4 delete ssm4 enter ssm4 verify ssm4	remove ssm4 restore ssm4	diagnose ssm4 dstat ssm4	ai* frm-m2* trunk

* This object should be entered before configuring a Stratum 4 Clock in the database.

change ssm4 (BNS-2000 only)

The **change ssm4** command enables you to modify information previously entered into the database for the Stratum 4 Clock (SSM4).

Syntax

You can input **change ssm4** in prompted entry only. If the module is disabled (out of service), the command syntax for **enter ssm4** and **change ssm4** are similar. If the module is enabled (in service), the **SOURCE TYPE** parameter cannot be changed. If the information is to be changed for an 8 kHz, only the **PRIMARY REFERENCE MODULE ADDRESS** and the **SECONDARY REFERENCE MODULE ADDRESS** can be changed.

The defaults for **change ssm4** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

```
CC0> change
OBJECTS [...ssm4...]: ssm4
```

If the module is disabled:

```
SOURCE TYPE: [t1/e1, 64Kcc, 8kHz: +(current default)]:
```

If current and new SOURCE TYPE are "8kHz":

```
PRIMARY REFERENCE MODULE ADDRESS [+(current default)]:
SECONDARY REFERENCE MODULE ADDRESS: [+(current default)]:
```

If current SOURCE TYPE is "t1/e1" or "64Kcc" and new SOURCE TYPE is "8kHz":

```
PRIMARY REFERENCE MODULE ADDRESS [+(none)]:
SECONDARY REFERENCE MODULE ADDRESS [+(none)]:
```

If the module is enabled:

If current SOURCE TYPE is "8kHz":

```
PRIMARY REFERENCE MODULE ADDRESS [+(none)]:
SECONDARY REFERENCE MODULE ADDRESS [+(none)]:
```

Parameters

Refer to the parameter definitions supplied in **enter ssm4**.

```
CC0> change
OBJECTS [...ssm4...]: ssm4
SOURCE TYPE: [t1/e1, 64Kcc, 8kHz: +(8kHz)]: +
PRIMARY REFERENCE MODULE ADDRESS [+(32)]: +
SECONDARY REFERENCE MODULE ADDRESS [+(78)]: 76
CC0>
```

SCREEN 4-116. Prompted Entry: Changing SSM4 Clock Information (8 kHz External Timing Source)

```
CC0> change
OBJECTS [...ssm4...]: ssm4
SOURCE TYPE [t1/e1, 64Kcc, 8kHz: +(8kHz)]: t1/e1
CC0>
```

SCREEN 4-117. Prompted Entry: Changing SSM4 Clock External Timing Source

delete ssm4 (BNS-2000 only)

The **delete ssm4** command enables you to eliminate information regarding the Stratum 4 Clock (SSM4) in the database. Before SSM4 information can be deleted, the module must be taken out of service with **remove ssm4**. In addition, information regarding the SSM4 cannot be deleted if a module residing in a Series M2 Shelf is using the SSM4 Clock as its transmit clock.

Syntax

You can input **delete ssm4** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...ssm4...]: ssm4
```

Parameters

None.

```
CC0> delete
OBJECTS [...ssm4...]: ssm4
CC0>
```

SCREEN 4-118. Prompted Entry: Deleting SSM4 Clock Information

```
CC0> delete ssm4
```

SCREEN 4-119. One-line Entry: Deleting SSM4 Clock Information

diagnose ssm4 (BNS-2000 only)

The **diagnose ssm4** command enables you to initiate an on-line self-test for the Stratum 4 Clock (SSM4). This test checks the ability of the SSM4 to generate accurate timing from the external reference source circuitry. To perform diagnostics, the SSM4 must be entered in the database and must be disabled with **remove ssm4**.

The self-test output gives information about the external primary and secondary reference source:

- If the primary and secondary reference source is a module residing in a Series M2 Shelf, the diagnostic output indicates if the source is functioning properly (*OK*), if a loss of signal (*LOS*) condition exists, or if the condition is *unknown*. If the primary and secondary reference sources are not known to the database, the diagnostic output indicates that the source is not available (*NA*).
- If the primary and secondary reference source is not a module residing in a Series M2 Shelf, the diagnostic output indicates if the source is functioning properly (*OK*), if a loss of signal (*LOS*) condition exists, if an alarm indication signal (*AIS*) has occurred, or if the condition is *unknown*.

If the self-test passes, the SSM4 timing signal remains activated and continues to be generated. If the self-test fails, the SSM4 timing signal is deactivated and the module is left in the fault state. If restore attempts fail, the SSM4 board should be replaced.

NOTE: This self-test runs automatically upon initial power up or during Control Computer initiated resets.

Syntax

You can input **diagnose ssm4** in prompted or one-line entry. Since the self-test executes in several seconds, pressing cannot halt test execution.

```
CC0> diagnose
OBJECTS [...ssm4...]: ssm4
```

Parameters

None.

```
CC0> diagnose
OBJECTS [...ssm4...]: ssm4
<test results>
CC0>
```

SCREEN 4-120. Prompted Entry: Running SSM4 Clock Self-test

diagnose ssm4

```
CC0> diagnose
OBJECTS [...ssm4...]: ssm4
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  diagnose ssm4

Stratum 4 Clock Diagnostic      PASS
Primary Reference Source       OK
Secondary Reference Source      OK
CC0>
```

SCREEN 4-121. One-line Entry/Output: Running SSM4 Clock Self-test (8 kHz External Timing Source)

```
CC0> diagnose
OBJECTS [...ssm4...]: ssm4
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  diagnose ssm4

Stratum 4 Clock Diagnostic      PASS
Primary Reference Source       OK
Secondary Reference Source      OK
CC0>
```

SCREEN 4-122. One-line Entry/Output: Running SSM4 Clock Self-test (T1/E1 External Timing Source)

dstat ssm4 (BNS-2000 only)

The **dstat ssm4** command enables you to display information regarding the status of the Stratum 4 Clock (SSM4).

Syntax

You can input **dstat ssm4** in prompted or one-line entry.

```
CC0> dstat
OBJECTS [...ssm4...]: ssm4
```

Parameters

None.

```
CC0> dstat
OBJECTS [...ssm4...]: ssm4
<report output>
```

SCREEN 4-123. Prompted Entry: Displaying SSM4 Clock Status

```
CC0> dstat ssm4
  <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat ssm4
BOARD TYPE: ssm4
SERVICE STATE: enabled
EXPECT SOURCE TYPE: 8kHz
REFERENCE SOURCE: free-running
LAST HARDWARE ALARM:
Secondary AIS <yy-mm-dd> <hh:mm:ss>
PRIMARY REFERENCE: *** none ***
SECONDARY REFERENCE:
  LOSS OF SIGNAL: yes
  ALARM INDICATION SIGNAL: n/a
  LOS ERROR COUNT: 1
  AIS ERROR COUNT: n/a
CC0>
```

SCREEN 4-124. One-line Entry/Output: Displaying SSM4 Clock Status (8 kHz Enabled)


```
CC0> dstat ssm4
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat ssm4
BOARD TYPE: ssm4
SERVICE STATE: disabled
EXPECT SOURCE TYPE: 8kHz
REFERENCE SOURCE: n/a
LAST HARDWARE ALARM:
none
PRIMARY REFERENCE:
      Status Unavailable
SECONDARY REFERENCE:
      Status Unavailable
CC0>
```

SCREEN 4-125. One-line Entry/Output: Displaying SSM4 Clock Status (Module Disabled)

```
CC0> dstat ssm4
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat ssm4
BOARD TYPE: ssm4
SERVICE STATE: enabled
EXPECT SOURCE TYPE: t1/e1
REFERENCE SOURCE: primary
LAST HARDWARE ALARM:
Primary LOS <yy-mm-dd> <hh:mm:ss>
PRIMARY REFERENCE:
      LOSS OF SIGNAL: yes
      ALARM INDICATION SIGNAL: no
      LOS ERROR COUNT: 1
      AIS ERROR COUNT: 0
SECONDARY REFERENCE:
      LOSS OF SIGNAL: no
      ALARM INDICATION SIGNAL: yes
      LOS ERROR COUNT: 0
      AIS ERROR COUNT: 1
CC0>
```

SCREEN 4-126. One-line Entry/Output: Displaying SSM4 Clock Status (T1/E1 Enabled)

```

CC0> dstat ssm4
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat ssm4

BOARD TYPE: ssm4
SERVICE STATE: enabled
EXPECT SOURCE TYPE: 64Kcc
REFERENCE SOURCE: free-running
LAST HARDWARE ALARM:
none
PRIMARY REFERENCE:
  LOSS OF SIGNAL: yes
  ALARM INDICATION SIGNAL: n/a
  LOS ERROR COUNT: 1
  AIS ERROR COUNT: n/a
SECONDARY REFERENCE:
  LOSS OF SIGNAL: yes
  ALARM INDICATION SIGNAL: n/a
  LOS ERROR COUNT: 1
  AIS ERROR COUNT: n/a
CC0>

```

SCREEN 4-127. One-line Entry/Output: Displaying SSM4 Clock Status (64Kcc Enabled)

Report Fields

The following report field descriptions are those that would appear for *every* variation of **dstat ssm4**.

AIS ERROR COUNT

For *t1/e1* source type, indicates the number of alarm indication signal (AIS) failure conditions detected by the SSM4 since last module reset. For *64Kcc* (64kb/s composite clock) or *8kHz* source type, this field reads *n/a*.

ALARM INDICATION SIGNAL

This field indicates whether (*yes* or *no*) the primary/secondary reference module was experiencing an alarm indication signal (AIS) error when status was reported. For *64Kcc* (64kb/s composite clock) or *8kHz* source type, this field reads *n/a*.

BOARD TYPE

The hardware type of the board is *ssm4*.

EXPECT SOURCE TYPE

The type of timing reference administered for the SSM4 is *t1/e1*, *64Kcc*, or *8kHz*.

When the source type is administered as *t1/e1* or *64Kcc* (64kb/s composite clock), the SSM4 expects to receive its primary and secondary reference clock signals from the Central Office (CO) clock. When the source type is administered as *8kHz*, the SSM4 expects to receive its reference clock signal from an appropriate module residing in a Series M2 Shelf.

Report Fields *(continued)*

LAST HARDWARE ALARM

Indicates the alarm text, date, and time of the last hardware alarm.

LOS ERROR COUNT

Indicates the number of loss of signal (LOS) failure conditions detected by the SSM4 since the last module reset; or, for a *8kHz* source type, since the last reference module change.

LOSS OF SIGNAL

Indicates whether (*yes* or *no*) the primary/secondary reference module experienced a loss of signal (LOS) error when status was reported.

An LOS is also declared if the expected and actual reference sources are not the same type, the reference source (*t1* or *64Kcc*) is not connected, or the reference module (*8kHz*) is out of service.

REFERENCE SOURCE

Indicates if the SSM4 signal is synchronized to the primary reference module (*primary*), secondary reference module (*secondary*), or in a free-running state (*free-running*) when a reference is not available.

SERVICE STATE

The service state of the SSM4 as known to the database is *enabled*, *disabled*, or *disabled (fault)*.

enter ssm4 (BNS-2000 only)

The **enter ssm4** command enables you to add information about the Stratum 4 Clock (SSM4) in the database. The SSM4 Clock is used in Series M2 Configurations supporting Stratum 4 clocking in non-extended (standard) switch configurations.

To prevent data loss over a facility because of a mismatch of clock rates, the node switching system maintains timing synchronization to an external reference source via the SSM4. The SSM4 CMC3 board can derive its signal from one of three sources:

- *64Kcc*—from the CO clock, 64 Kbps alternate mark inversion (AMI)-coded composite clock
- *t1/e1*—from the CO clock
- *8kHz*—from the T1 facility via an appropriate module residing in a Series M2 Shelf

If the primary reference source fails, switchover to the secondary reference source is automatic. If both sources are unavailable, the SSM4 defaults to a *free running* state. In this state, it generates either a 1.554 Mbps or 2.048 Mbps timing signal, depending on the switch setting on the CMC3 I/O board. This signal is output to the CNA1 Cable/Clock I/O board which, in turn, distributes it to the Series M2 Extension Shelves.

When the source type is *8kHz*, the primary and secondary references are derived from the data received on port 1 of two specified modules residing in a Series M2 Shelf. Information about the two (primary and secondary) module ports used as reference must be entered prior to entering or changing information about the SSM4.

Syntax

You can input **enter ssm4** in prompted entry only. The defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...ssm4...]: ssm4
SOURCE TYPE [t1/e1, 64Kcc, 8kHz]:

If SOURCE TYPE is "8kHz":
PRIMARY REFERENCE MODULE ADDRESS [module address, none: +(none)]:
SECONDARY REFERENCE MODULE ADDRESS [module address, none: +(none)]:
```

enter ssm4

Parameters

This section explains the parameters used in the **enter ssm4** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

PRIMARY REFERENCE MODULE ADDRESS

If **SOURCE TYPE** is *8kHz*, specifies the module address of the appropriate module residing in a Series M2 Shelf. When the module is entered, port 1 is reserved for the reference clock.

If the address of the primary reference module is the only external timing source specified, the SSM4 synchronizes its signal to that of the primary reference module.

SECONDARY REFERENCE MODULE ADDRESS

If **SOURCE TYPE** is *8kHz*, specifies the module address of the appropriate module residing in a Series M2 Shelf. The module address must be different from that specified for **PRIMARY REFERENCE MODULE ADDRESS**. When the specified module is entered, port 1 is reserved for the reference clock.

If the address of the primary reference module is unavailable, the SSM4 automatically switches to the secondary reference module for its timing signal.

SOURCE TYPE

Specifies if the external reference source (the external timing signal) is to be provided from *t1/e1*, *64Kcc*, or *8kHz*; where: *t1/e1* or *64Kcc* represent external timing received from the primary and secondary reference clocks in a central office; *8kHz* represents external timing received from the Series M2 module residing on the node backplane.

```
CC0> enter
OBJECTS [...ssm4...]: ssm4
SOURCE TYPE [t1/e1, 64Kcc, 8kHz]: 8kHz
PRIMARY REFERENCE MODULE ADDRESS [module address, none: +(none)]: 32
SECONDARY REFERENCE MODULE ADDRESS [module address, none: +(none)]: 78
CC0>
```

SCREEN 4-128. Prompted Entry: Entering SSM4 Clock Information (8 kHz External Timing Source)

```
CC0> enter
OBJECTS [...ssm4...]: ssm4
SOURCE TYPE [t1/e1, 64Kcc, 8kHz]: t1/e1
CC0>
```

SCREEN 4-129. Prompted Entry: Entering SSM4 Clock Information (T1/E1 External Timing Source)

remove ssm4

remove ssm4 (BNS-2000 only)

The **remove ssm4** command enables you to take the Stratum 4 Clock (SSM4) out of service. If the SSM4 is removed from service and it references a module residing in a Series M2 Shelf, service is affected.

Syntax

You can input **remove ssm4** in prompted or one-line entry.

```
CC0> remove
OBJECTS [...ssm4...]: ssm4
```

Parameters

None.

```
CC0> remove
OBJECTS [...ssm4...]: ssm4
CC0>
```

SCREEN 4-130. Prompted Entry: Removing SSM4 Clock from Service

```
CC0> remove ssm4
```

SCREEN 4-131. One-line Entries: Removing SSM4 Clock from Service

restore ssm4 (BNS-2000 only)

The **restore ssm4** command puts the Stratum 4 Clock (SSM4) in service. If the SSM4 synchronizes its timing to an external primary/secondary reference source and neither is available, it defaults to a free-running mode of 1.544 (2.048) MHz. If only one external reference source is available or if both the primary and secondary reference source are available, the SSM4 synchronizes its timing signals to those of the source.

Syntax

You can input **restore ssm4** in prompted or one-line entry.

```
CC0> restore
OBJECTS [...ssm4...]: ssm4
```

Parameters

None.

```
CC0> restore
OBJECTS [...ssm4...]: ssm4
CC0>
```

SCREEN 4-132. Prompted Entry: Restoring SSM4 Clock to Service

```
CC0> restore ssm4
```

SCREEN 4-133. One-line Entries/Output: Restoring SSM4 Clock to Service

verify ssm4 (BNS-2000 only)

The output of the **verify ssm4** command enables you to check information entered in the database for the Stratum 4 Clock (SSM4).

Syntax

You can input **verify ssm4** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...ssm4...]: ssm4
```

Parameters

None.

```
CC0> verify
OBJECTS [...ssm4...]: ssm4
```

SCREEN 4-134. Prompted Entry: Verifying SSM4 Clock Information

```
CC0> verify ssm4
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify ssm4
SERVICE STATE: enabled
SOURCE TYPE: 8kHz
PRIMARY REFERENCE MODULE ADDRESS: 8
SECONDARY REFERENCE MODULE ADDRESS: 23
CC0>
```

SCREEN 4-135. One-line Entry/Output: Verifying SSM4 Clock Information (8 kHz External Timing Source)

```

CC0> verify ssm4
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  verify ssm4

    SERVICE STATE: disabled
    SOURCE TYPE: t1/e1
CC0>

```

SCREEN 4-136. One-line Entry/Output: Verifying SSM4 Clock Information (T1/E1 External Timing Source)

```

CC0> verify ssm4
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  verify ssm4

    SERVICE STATE: disabled
    SOURCE TYPE: 64Kcc
CC0>

```

SCREEN 4-137. One-line Entry/Output: Verifying SSM4 Clock Information (64Kcc External Timing Source)

Report Fields

This table correlates each report field heading shown in the output of **verify ssm4** to the parameter for which you are prompted in **enter ssm4** or **change ssm4**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	Corresponding Parameter Name
PRIMARY REFERENCE MODULE ADDRESS	PRIMARY REFERENCE MODULE ADDRESS
SECONDARY REFERENCE MODULE ADDRESS	SECONDARY REFERENCE MODULE ADDRESS
SERVICE STATE	None: whether the module is enabled or disabled
SOURCE TYPE	SOURCE TYPE

System Responses

This section contains system responses for the **ssm4** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Cannot delete ssm4 if modules are using ssm4 as clock source.

Information regarding the ssm4 clock cannot be deleted if Series M2 Shelf modules are using the SSM4 as their timing source.

SSM4 is not configured.

The self-test cannot run because the module was not administered in the database.

INPUT ERROR:

Cannot delete ssm4 while it is enabled.

The SSM4 must be removed from service before information is deleted from the database.

Module <addr> is a <type> module, <type> AI expected.

The specified module address has been designated for a module type other than that specified.

Module <addr> is not a T1 AI or T1/E1 FRM-M2 as expected.

The specified module address being assigned as the primary or secondary reference module address is not a T1 AI or T1/E1 FRM-M2 module type.

Module <addr> is used for driving primary reference clock.

The module residing at the specified module address has been designated as the module from which the primary reference clock is to receive its timing.

Module <addr> is used for primary reference module address.

The specified module address has been designated for the primary reference module address.

Node is equipped with an STR4, not an SSM4 Stratum 4 Clock. Please use <change/delete/diagnose/dstat/remove/restore/verify> str4 instead of this command.

The node is equipped with an STR4, not an SSM4 Stratum 4 Clock. The SSM4 commands cannot be used. Please refer to the **str4** command set.

Number or none expected.

The input must be a numeral or the word "none".

Shelf must exist before administering or accessing a module.

The module cannot be administered because the shelf is not administered in the database.

Slot is reserved.

The specified module address is being used by another module.

SSM4 is already entered.

The module was administered in the database.

SSM4 is not entered.

The module was not administered in the database.

NO KEY PHRASE:**DATABASE BEING MODIFIED - TRY AGAIN LATER**

The command process cannot continue because the database is being changed. Wait a while and retry the command.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file was removed from the disk.) Contact your local support group.

SSM4 must be out of service for on-line diagnostics.

Use **remove ssm4** to take the module out of service so the self-test can be run.

REMOVE/RESTORE FAILED:**could not send message to config.**

The command processor was unable to send a message to the configuration process.

SSM4 is already <enabled/disabled>.

The module is already in the requested service state.

SSM4 is not entered in the database

Module information has not been added to the database.

SSM4 is not present.

The module has not been installed.

system too busy. Try again later.

The system has a heavy processing load.

<Primary/Secondary> reference module is not in service.

Because external clocking is not being provided, the SSM4 defaults to its free running mode of 1.544 (2.048) MHz.

SSM4 is being referenced. AI/T1 service will be affected.

Because the SSM4 receives its external timing from the specified modules, module service is affected if the clock is disabled.

WARNING:**No further prompt can be changed.**

The prompting sequence does not continue.

No primary or secondary reference module addresses is entered.**The ssm4 will be in free-running mode.**

When external clocking is not provided, the SSM4 defaults to a free running state of 1.544 (2.048) MHz.

WARNING: *(continued)*

Modules and/or port driving the ssm4 are out of service.

The ssm4 will be in free-running mode.

When external clocking is not provided, the SSM4 state defaults to a free running state of 1.544 (2.048) MHz.

Module <addr> is not entered.

The specified module address was not administered in the database.

Primary and secondary reference modules are not in service.

SSM4 is in free-running state.

Because external clocking is not being provided, the SSM4 defaults to its free running mode of 1.544 (2.048) MHz.

Primary and secondary reference modules do not exist.

SSM4 is in free-running state.

Because external clocking is not being provided, the SSM4 defaults to its free running mode of 1.544 (2.048) MHz.

<Primary/Secondary> reference module does not exist.

Because external clocking is not being provided, the SSM4 defaults to its free running mode of 1.544 (2.048) MHz.

str4 command set (BNS-2000 only)

The STR4 command set is used in Series M2 Configurations supporting Stratum 4 clocking in extended switch configurations. The following commands are related to the **str4** command set.

Administration	Operation	Maintenance	Related Objects
change str4 delete str4 enter str4 verify str4	remove str4 restore str4 switchover str4	diagnose str4 dstat str4	ai* frm-m2*

* If the Stratum 4 Clock will be using *line* timing, this object must be entered before the Stratum 4 Clock can be configured to reference it.

change str4 (BNS-2000 only)

The **change str4** command enables you to modify the configuration of the Stratum 4 Clock (STR4).

If the Stratum 4 complex is out of service, the command syntax for **enter str4** and **change str4** are similar.

If the Stratum 4 complex is in service, the parameters that can be changed by this command vary, depending on the value of **CLOCK REFERENCE SOURCE**. If the value of **CLOCK REFERENCE SOURCE** is *none*, the Stratum 4 complex must be removed from service before any parameters can be changed. If the value of **CLOCK REFERENCE SOURCE** is *line*, the parameters that can be changed are the **CLOCK REFERENCE SOURCE**, the **PRIMARY REFERENCE MODULE ADDRESS**, the **SECONDARY REFERENCE MODULE ADDRESS**, and the **REFERENCE REVERSION** parameters. If the value of **CLOCK REFERENCE SOURCE** is *external*, the parameters that can be changed are the **CLOCK REFERENCE SOURCE**, the **PRIMARY RIB** and the **REFERENCE REVERSION** parameters. The **CLOCK REFERENCE SOURCE** cannot be changed from *line* to *external* or from *external* to *line* while in service. In addition, a change made to the **PRIMARY REFERENCE MODULE ADDRESS**, or the **PRIMARY RIB**, while the Stratum 4 complex is in service can result in a reference switchover.

If the **CLOCK REFERENCE SOURCE** is *line*, and a change is being made from a valid line reference module to *none*, the Stratum 4 line reference state must be out-of-service first. (The service state of the reference module and port does not matter, though presumably it will be in-service.) Conversely, if the change is being made from *none* to a valid module, the Stratum 4 line reference state will initially be out-of-service and will have to be manually put into service with **restore str4**.

The defaults for **change str4** are those values, conditions, or states that currently exist in the database. They are displayed within parentheses in the parameter prompt.

Syntax

You can input **change str4** in prompted entry only.

```
CC0> change
OBJECTS [...str4...]: str4
```

If the Stratum 4 complex is out of service:

```
CLOCK REFERENCE SOURCE: [line, external, none: +(current value)]:
```

If current and new CLOCK REFERENCE SOURCE are "line":

```
PRIMARY REFERENCE MODULE ADDRESS [module address: +(current value)]:
```

```
SECONDARY REFERENCE MODULE ADDRESS: [module address, none: +(current value)]:
```

If SECONDARY REFERENCE MODULE ADDRESS is not "none":

```
REFERENCE REVERSION [off, on: +(current value)]:
```

```
STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(current value)]:
```

If current CLOCK REFERENCE SOURCE is "external" or "none" and new CLOCK REFERENCE SOURCE is "line":

```
PRIMARY REFERENCE MODULE ADDRESS [module address: +(current value)]:
```

```
SECONDARY REFERENCE MODULE ADDRESS: [module address, none: +(current value)]:
```

If SECONDARY REFERENCE MODULE ADDRESS is not "none":

```
REFERENCE REVERSION [off, on: +(current value)]:
```

```

STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(current value)]:
If current and new CLOCK REFERENCE SOURCE is "external":
  RIB TYPE [t1, e1, 64kcc: +(current value)]:
  If current and new RIB TYPE is "t1":
    FRAMING FORMAT [d4, esf: +(current value)]:
  If current RIB TYPE is not "t1" and new RIB TYPE is "t1":
    FRAMING FORMAT [d4, esf: +(esf)]:

    PRIMARY RIB [a, b: +(current value)]:
    REFERENCE REVERSION [off, on: +(current value)]:
  If RIB TYPE is "64kcc":
    STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(current value)]:

If current CLOCK REFERENCE SOURCE is "line" or "none" and new CLOCK REFERENCE SOURCE is "external":
  RIB TYPE [t1, e1, 64kcc: +(t1)]:
  If RIB TYPE is "t1":
    FRAMING FORMAT [d4, esf: +(esf)]:

    PRIMARY RIB [a, b: +(a)]:
    REFERENCE REVERSION [off, on: +(current value)]:
  If RIB TYPE is "64kcc":
    STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(current value)]:

If the Stratum 4 complex is in service:
If current CLOCK REFERENCE SOURCE is "external":
  CLOCK REFERENCE SOURCE: [external, none: +(external)]:
  If new CLOCK REFERENCE SOURCE is "external":
    PRIMARY RIB [a, b: +(current value)]:
    REFERENCE REVERSION [off, on: +(current value)]:

  If current SOURCE TYPE is "line":
    CLOCK REFERENCE SOURCE: [line, none: +(line)]:
  If new CLOCK REFERENCE SOURCE is "line":
    PRIMARY REFERENCE MODULE ADDRESS [module address: +(current value)]:
    SECONDARY REFERENCE MODULE ADDRESS [module address, none: +(current value)]:
  If SECONDARY REFERENCE MODULE ADDRESS is not "none":
    REFERENCE REVERSION [off, on: +(current value)]:

```

Parameters

Refer to the parameter definitions supplied in **enter str4**.

```

CC0> change
OBJECTS [...str4...]: str4
CLOCK REFERENCE SOURCE [external, none: +(external)]: +
PRIMARY RIB [a, b: +(a)]: b
REFERENCE REVERSION [off, on: +(current value)]: +
CC0>

```

SCREEN 4-138. Prompted Entry: Changing STR4 Clock Information (External Timing Source and STR4 Complex In Service)

change str4

```
CC0> change
OBJECTS [...str4...]: str4
CLOCK REFERENCE SOURCE [line, external, none: +(line)]: +
PRIMARY REFERENCE MODULE ADDRESS [module address: +(32)]: +
SECONDARY REFERENCE MODULE ADDRESS [module address, none: +(78)]: 6
REFERENCE REVERSION [off, on: +(current value)]: +
STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(e1)]: +
CC0>
```

SCREEN 4-139. Prompted Entry: Changing STR4 Clock Information (Line Timing Source and STR4 Complex Out of Service)

```
CC0> change
OBJECTS [...str4...]: str4
CLOCK REFERENCE SOURCE [line, external, none: +(external)]: +
RIB TYPE [t1, e1, 64kcc: +(64kcc)]: t1
FRAMING FORMAT [d4, esf: +(esf)]: esf
PRIMARY RIB [a, b: +(a)]: b
REFERENCE REVERSION [off, on: +(current value)]: +

INFO: STRATUM 4 CLOCK OUTPUT FREQUENCY will be configured to match RIB TYPE.
CC0>
```

SCREEN 4-140. Prompted Entry: Changing STR4 Clock Information (External Timing Source and STR4 Complex Out of Service)

```
CC0> change
OBJECTS [...str4...]: str4
CLOCK REFERENCE SOURCE [line, external, none: +(line)]: none
WARNING: No clock reference source is entered.
         The str4 will be in free-running mode.
STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(current value)]: +
CC0>
```

SCREEN 4-141. Prompted Entry: Changing STR4 Clock to Free Running (STR4 Complex Out of Service)

delete str4 (BNS-2000 only)

The **delete str4** command allows you to eliminate database information regarding the Stratum 4 Clock (STR4). Before STR4 information can be deleted, the complex must be taken out of service with **remove str4**. In addition, information regarding the STR4 cannot be deleted if a module residing in a Series M2 Shelf is using the STR4 Clock as its transmit clock.

Syntax

You can input **delete str4** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...str4...]: str4
```

Parameters

None.

```
CC0> delete
OBJECTS [...str4...]: str4
CC0>
```

SCREEN 4-142. Prompted Entry: Deleting STR4 Clock Information

```
CC0> delete str4
```

SCREEN 4-143. One-line Entry: Deleting STR4 Clock Information

diagnose str4 (BNS-2000 only)

The **diagnose str4** command enables you to initiate diagnostics for the Stratum 4 Clock (STR4) when the node is operational. This test checks the ability of the STR4 to generate timing from the reference source. To perform diagnostics, the STR4 must be entered in the database and must be out of service by removing the STR4 complex.

When running the STR4 diagnostics, if the STR4 is used as a timing reference by a module residing in a Series M2 Shelf, service to that M2 module may be affected.

The diagnostic output gives information about sync units A and B and the primary and secondary reference source:

- The diagnostic output indicates if sync unit A and sync unit B are functioning properly (*OK*) or if they are not functioning properly (*FAILED*).
- If the clock reference source is line (the primary and secondary reference source is a module residing in a Series M2 Shelf), the diagnostic output indicates if the source is functioning properly (*OK*), if a loss of signal (*LOS*) condition exists, or if the condition is *unknown*. If the secondary reference source is not known to the database, the diagnostic output indicates that the source is not available (*NA*).
- If the reference clock source is external, the diagnostic output indicates if RIB A and RIB B and their sources are functioning properly (*OK*), if a loss of signal (*LOS*) condition exists, if an alarm indication signal (*AIS*) has occurred (for t1/e1 only), if an out-of-frame condition (*OOF*) has occurred (for t1 only), or if the condition is *unknown*. If a mismatch occurs between the database configuration and the hardware bit settings, the diagnostic output indicates that the RIB(s) and their sources are not available (*NA*).

If the diagnostic fails, more detailed diagnostic testing can be done using the loader diagnostics.

Syntax

You can input **diagnose str4** in prompted or one-line entry. Since the diagnostic test executes in several seconds, pressing cannot halt test execution.

```
CC0> diagnose
OBJECTS [...str4...]: str4
```

Parameters

None.

```
CC0> diagnose
OBJECTS [...str4...]: str4
<test results>
CC0>
```

SCREEN 4-144. Prompted Entry: Running STR4 Clock Diagnostic

```
CC0> diagnose str4
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  diagnose str4
Sync Unit A                OK
Sync Unit B                OK
CC0>
```

SCREEN 4-145. One-line Entry/Output: Running STR4 Clock Diagnostic (No Timing Source)

```
CC0> diagnose str4
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  diagnose str4
Sync Unit A                OK
Sync Unit B                OK
Primary Reference Source    OK
Secondary Reference Source  OK
CC0>
```

SCREEN 4-146. One-line Entry/Output: Running STR4 Clock Diagnostic (Line Timing Source)

```
CC0> diagnose str4
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  diagnose str4
Sync Unit A                OK
Sync Unit B                OK
RIB A                      OK
RIB B                      OK
CC0>
```

SCREEN 4-147. One-line Entry/Output: Running STR4 Clock Diagnostic (External Timing Source)

dstat str4

dstat str4 (BNS-2000 only)

The **dstat str4** command enables you to display information regarding the status of the Stratum 4 Clock (STR4).

Syntax

You can input **dstat str4** in prompted or one-line entry.

```
CC0> dstat
OBJECTS [...str4...]: str4
DETAIL [low, high: +(low)]: high
```

Parameters

DETAIL

Specifies if the output is to show a limited amount of information (*low* detail) or more information (*high* detail).

```
CC0> dstat
OBJECTS [...str4...]: str4
DETAIL [low, high: +(low)]: high
<report output>
```

SCREEN 4-148. Prompted Entry: Displaying High Detail STR4 Clock Status

```

CC0> dstat str4 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat str4 high
*****
STRATUM 4 CLOCK OUTPUT FREQUENCY: t1
CLOCK REFERENCE SOURCE: external
SYNCHRONIZATION UNITS

  SYNC  SERVICE  SERVICE  OPERATING  ENABLED  HARDWARE
  UNIT  TYPE     STATE    MODE       errors   ERRORS
  a     active   in service normal     yes      0
  b     standby  oos,manual n/a        no       0

SYNC UNIT A - LAST HARDWARE ALARM
none

SYNC UNIT B - LAST HARDWARE ALARM
none

LAST SYNC UNIT SWITCHOVER
none

*****
RIB TYPE: t1
FRAMING FORMAT: d4
REFERENCE REVERSION: off

  REF  SERVICE  SERVICE  ENABLED  HARDWARE
  UNIT TYPE     STATE    errors   ERRORS
  a     active   in service yes      0
  b     standby  in service yes      0

  UNIT  LOS  AIS  OOF
  a     no  no  no
  b     no  no  no

RIB A - LAST HARDWARE ALARM
none

RIB B - LAST HARDWARE ALARM
none

LAST REFERENCE SWITCHOVER
none

----- HIGH DETAIL -----
UNIT  ACTUAL  ACTUAL  ACTUAL  ACTUAL  EXPECT  EXPECT  EXPECT  EXPECT
TYPE  LOC   STAT1   STAT2   STAT3   STAT4   STAT1   STAT2   STAT3   STAT4
sync  a     140     60     101     0       140     60     101     0
sync  b     140     60     101     0       140     60     101     0
ref   a      7      40     n/a     n/a      7      40     n/a     n/a
ref   b      7      40     n/a     n/a      7      40     n/a     n/a

UNIT  LOS  AIS  OOF  REF  NOT
TYPE  LOC  COUNT  COUNT  COUNT  FAIL  PRESENT
ref   a    0      0      0      0      0
ref   b    0      0      0      0      0
CC0>

```

SCREEN 4-149. One-line Entry/Output: Displaying High Detail STR4 Clock Status (External Timing Source)

```
CC0> dstat str4 high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat str4 high
*****
STRATUM 4 CLOCK OUTPUT FREQUENCY: t1
CLOCK REFERENCE SOURCE: line
SYNCHRONIZATION UNITS
  SYNC  SERVICE  SERVICE  OPERATING  ENABLED  HARDWARE
  UNIT  TYPE     STATE    MODE       YES      ERRORS
  a     active   in service normal     yes      0
  b     standby  in service normal     yes      0
SYNC UNIT A - LAST HARDWARE ALARM
none
SYNC UNIT B - LAST HARDWARE ALARM
none
LAST SYNC UNIT SWITCHOVER
none
*****
PRIMARY REFERENCE MODULE ADDRESS: 8
SECONDARY REFERENCE MODULE ADDRESS: 20
REFERENCE REVERSION: off
  REF      SERVICE  SERVICE  LOS
  UNIT     TYPE     STATE    YES
  primary  standby  in service yes
  secondary active   in service no
PRIMARY REFERENCE - LAST HARDWARE ALARM
Primary LOS <yy-mm-dd> <hh:mm:ss>
SECONDARY REFERENCE - LAST HARDWARE ALARM
none
LAST REFERENCE SWITCHOVER
<yy-mm-dd> <hh:mm:ss>
----- HIGH DETAIL -----
UNIT  ACTUAL  ACTUAL  ACTUAL  ACTUAL  EXPECT  EXPECT  EXPECT  EXPECT
TYPE  LOC   STAT1   STAT2   STAT3   STAT4   STAT1   STAT2   STAT3   STAT4
sync  a    140     60     101     0       140     60     101     0
sync  b    140     60     101     0       140     60     101     0
UNIT  LOS    REF
TYPE  LOC   COUNT FAIL
ref   pri   1      0
ref   sec   0      0
CC0>
```

SCREEN 4-150. One-line Entry/Output: Displaying High Detail STR4 Clock Status (Line Timing Source)

```
CC0> dstat str4 high

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat str4 high

*****
STRATUM 4 CLOCK OUTPUT FREQUENCY: e1
CLOCK REFERENCE SOURCE: none

SYNCHRONIZATION UNITS

  SYNC  SERVICE  SERVICE  OPERATING
  UNIT  TYPE     STATE     MODE      ENABLED  HARDWARE
  a     active   in service self      yes     0
  b     standby  in service self      yes     0

SYNC UNIT A - LAST HARDWARE ALARM
none

SYNC UNIT B - LAST HARDWARE ALARM
none

LAST SYNC UNIT SWITCHOVER
none

----- HIGH DETAIL -----
UNIT  ACTUAL  ACTUAL  ACTUAL  ACTUAL  EXPECT  EXPECT  EXPECT  EXPECT
TYPE  LOC    STAT1   STAT2   STAT3   STAT4   STAT1   STAT2   STAT3   STAT4
sync  a     140    60     101    0       140    60     101    0
sync  b     140    60     101    0       140    60     101    0
CC0>
```

SCREEN 4-151. One-line Entry/Output: Displaying High Detail STR4 Clock Status (No Timing Source)

Report Fields

ACTUAL STAT1

The actual value of the first hardware status byte of the most currently received status packet for the sync unit or RIB. The actual and expected values of **STAT1** may differ in some cases.

ACTUAL STAT2

The actual value of the second hardware status byte of the most currently received status packet for the sync unit or RIB. The actual and expected values of **STAT2** may differ in some cases.

ACTUAL STAT3

The actual value of the third hardware status byte of the most currently received status packet for the sync unit or RIB. The actual and expected values of **STAT3** may differ in some cases.

ACTUAL STAT4

The actual value of the fourth hardware status byte of the most currently received status packet for the sync unit or RIB. The actual and expected values of **STAT4** may differ in some cases.

AIS

If **RIB TYPE** is *t1* or *e1*, indicates whether (*yes* or *no*) the active or standby RIB was experiencing an Alarm Indication Signal (AIS) error when status was reported. For 64Kcc (64kb/s composite clock) clock reference source, this field reads *n/a*.

AIS COUNT

If **RIB TYPE** is *t1* or *e1*, indicates the number of alarm indication signal (AIS) failure conditions detected by the Stratum 4 Clock since the last module reset. For 64Kcc (64kb/s composite clock) clock reference source, this field reads *n/a*.

CLOCK REFERENCE SOURCE

The **CLOCK REFERENCE SOURCE** is specified as *line*, *external* or *none*. A value of *line* indicates the source of the clock reference will be a T1 facility via an AI or T1/E1 facility via FRM-M2 module residing in a Series M2 shelf. A value of *external* indicates the source will be a Central Office (CO) clock via a Reference Input Board (RIB). A value of *none* will allow the Stratum 4 Clock to run in free-run mode without alarms. Forcing the Stratum 4 Clock to run in free-run mode is not recommended.

ENABLED

Indicates whether (*yes* or *no*) a sync unit or RIB is enabled internally. The value of this field is determined only from status packet information.

EXPECT STAT1

The expected value of the first hardware status byte for the sync unit or RIB.

EXPECT STAT2

The expected value of the second hardware status byte for the sync unit or RIB.

EXPECT STAT3

The expected value of the third hardware status byte for the sync unit or RIB.

EXPECT STAT4

The expected value of the fourth hardware status byte for the sync unit or RIB.

FRAMING FORMAT

If **RIB TYPE** is *t1*, indicates whether the extended superframe (ESF) or superframe (D4) framing format is configured for the RIB.

HARDWARE ERRORS

Indicates the number of hardware errors that have been reported against this sync unit or RIB since the last reset of the Stratum 4 Clock. For sync units, the error count is the number of synchronization unit failures that have occurred.

LAST HARDWARE ALARM

Indicates the alarm text, date, and time of the last hardware alarm.

LAST REFERENCE SWITCHOVER

The date and time of the last switchover of the reference. If a switchover has not occurred since the last reset of the Stratum 4 Clock, this field reads *none*.

LAST SYNC UNIT SWITCHOVER

The date and time of the last switchover of the sync unit. If a switchover has not occurred since the last reset of the Stratum 4 Clock, this field reads *none*.

LOC

Indicates which sync unit or reference is reported on this line of the report. Both sync units and RIBs are indicated by (*a* or *b*), while *line* references are indicated by *pri* for primary or *sec* for secondary.

LOS

Indicates whether (*yes* or *no*) the reference experienced a loss of signal (LOS) error when status was reported.

An LOS is also declared if the expected and actual reference sources are not the same type, the reference source (*t1*, *e1* or *64Kcc*) is not connected, or the reference module (*line*) is out of service or has errors.

LOS COUNT

Indicates the number of loss of signal (LOS) failure conditions detected by the Stratum 4 Clock since it was last reset.

NOT PRESENT

Indicates the number of times the RIB was reported missing (either not physically present or not responding to status polls) by the I/O board.

OOF

If **RIB TYPE** is *t1*, indicates whether (*yes* or *no*) a DS1 Out-of-Frame (OOF) condition was detected.

OOF COUNT

If **RIB TYPE** is *t1*, indicates the number of OOF failure indications since the last reset of the Stratum 4 Clock.

OPERATING MODE

This is the operating mode of the indicated sync unit which can take on values of *self* for free-run mode, *hold* for running in holdover mode, *trans* for when the sync unit is in acquisition mode attempting to synchronize to a reference, and *normal* when the sync unit is synchronized to a valid reference. It is not recommended to have the sync unit run in free-run mode.

PRIMARY REFERENCE MODULE ADDRESS

If **CLOCK REFERENCE SOURCE** is *line*, specifies the module address of an AI or FRM-M2 module residing in a Series M2 Shelf. The specified module and its port 1 must be configured and in service in order for it to serve as a valid reference.

REF FAIL

Indicates the number of times the reference failed for one of the following reasons: the synchronization unit unsuccessfully polled the RIB, the sync unit is missing transitions on its reference clock input from the reference, or the reference is severely off frequency.

REF UNIT

Specifies which reference unit is indicated in this line of the report. RIBs are indicated by *a* or *b*, while *line* references are indicated by *primary* or *secondary*.

REFERENCE REVERSION

Indicates whether (*on* or *off*) it is allowable to automatically switch from the secondary reference to the primary reference in the situation where the primary reference was lost, the clock switched to the secondary reference, and then the primary signal was regained. It is recommended to set the reference reversion to the default value of *off*.

RIB TYPE

When using external references, there are RIB boards that must be plugged into the I/O board. This field indicates how the RIB boards are configured.

SECONDARY REFERENCE MODULE ADDRESS

If **CLOCK REFERENCE SOURCE** is *line*, specifies the module address of an AI or FRM-M2 module residing in a Series M2 Shelf. The module address must be different from that specified for **PRIMARY REFERENCE MODULE ADDRESS**. The specified module and its port 1 must be configured and in service in order for it to serve as a valid reference.

If the primary reference module is unavailable, the Stratum 4 Clock automatically switches to the secondary reference module for its timing signal.

SERVICE STATE

The service state of the sync unit, RIB, or reference as known to the database. The values can be *in service* (via **restore**), or *oos, manual* (out of service via **remove**), or *oos,auto,fault* (out of service via the alarm system).

SERVICE TYPE

Indicates whether the sync unit or reference is active or standby. This field can also appear as *n/a* for a sync unit or reference that is out of service.

STRATUM 4 CLOCK OUTPUT FREQUENCY

Specifies the frequency of the output signal that the Stratum 4 Clock supplies to other modules that use it as a timing reference.

SYNC UNIT

Specifies which synchronization unit is indicated in this line of the report, *a* or *b*.

UNIT TYPE

Indicates whether this line of the report pertains to a sync unit or reference.

enter str4 (BNS-2000 only)

The **enter str4** command enables you to add information about the Stratum 4 Clock (STR4) in the database. The **enter str4** command is used in Series M2 Configurations supporting Stratum 4 clocking in extended switch configurations.

To prevent data loss over a facility because of a mismatch of clock rates, the node switching system maintains timing synchronization to an external reference source via the STR4. The STR4 can derive its signal from one of four sources:

- *64Kcc*—from the CO clock, 64 Kbps alternate mark inversion (AMI)-coded composite clock
- *t1/e1*—from the CO clock
- *Line*—from the T1 facility of an AI module or the T1/E1 facility of an FRM-M2 module residing in a Series M2 Shelf
- *Self-timing*—from an on-board Stratum 4 compliant oscillator.

To use 64Kcc, t1, or e1 sources, the **CLOCK REFERENCE SOURCE** must be configured as *external* and the **RIB TYPE** (same for both RIBs) must be configured as either *64Kcc*, *t1*, or *e1*. To use line sources, the **CLOCK REFERENCE SOURCE** must be configured as *line*. To put the clock into self-timing or *free running* mode, the **CLOCK REFERENCE SOURCE** must be configured as *none*.

If the primary reference source fails, switchover to the secondary reference source is automatic. If both references are failed, the STR4 goes to a *holdover* state if it had been successfully running with any of the sources, otherwise it goes to the *free running* state. In the *free running* state, it generates either a 1.554 Mbps (T1) or 2.048 Mbps (E1) timing signal from its on-board oscillator, depending on how the **STRATUM 4 CLOCK OUTPUT FREQUENCY** is configured.

When the **CLOCK REFERENCE SOURCE** is *line*, the primary and secondary references are derived from the signals received on port 1 of two specified modules residing in Series M2 shelves. Information about the two (primary and secondary) module ports used as reference must be entered prior to entering or changing information about the STR4.

Syntax

You can input **enter str4** in prompted entry only. The defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...str4...]: str4
CLOCK REFERENCE SOURCE [line, external, none]:

If CLOCK REFERENCE SOURCE is "external":
  RIB TYPE [t1, e1, 64kcc: +(t1)]:
  If RIB TYPE is "t1":
    FRAMING FORMAT [d4, esf: +(esf)]:
    PRIMARY RIB [a, b: +(a)]:
    REFERENCE REVERSION [off, on: +(off)]:
  If RIB TYPE is "64kcc":
    STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(t1)]:
```

enter str4

If **CLOCK REFERENCE SOURCE** is *line*:

PRIMARY REFERENCE MODULE ADDRESS [module address]:

SECONDARY REFERENCE MODULE ADDRESS [module address, none: +(none)]:

If **SECONDARY REFERENCE MODULE ADDRESS** is not *none*:

REFERENCE REVERSION [off, on: +(off)]:

STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(t1)]:

If **CLOCK REFERENCE SOURCE** is *none*:

STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(t1)]:

Parameters

This section explains the parameters used in the **enter str4** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

CLOCK REFERENCE SOURCE

Specifies the source for the reference clocking to be *line*, *external*, or *none*. The *line* option indicates that the source of the clock reference is to be a T1 or E1 facility via an appropriate M2 module in the BNS-2000 node. The *external* option indicates the source is to be a CO clock and is presented to the Stratum 4 Clock from a Reference Input Board (RIB). The *none* option allows the clock to run in free running mode without alarms.

FRAMING FORMAT

If **RIB TYPE** is *t1*, specifies the framing format that is used for the signal of the external reference source to be *d4* or *esf*.

PRIMARY REFERENCE MODULE ADDRESS

If **CLOCK REFERENCE SOURCE** is *line*, the module address of an AI or FRM-M2 module is residing in a Series M2 Shelf. The specified module and its port 1 must be configured and be in service for it to serve as a valid reference.

PRIMARY RIB

If **CLOCK REFERENCE SOURCE** is *external*, specifies which Reference Input Board (RIB), *a* or *b*, should be considered the primary and the normal source for the timing signal. The RIB not specified will be the secondary, and will only be used if a failure of the primary or a manual switchover occurs.

REFERENCE REVERSION

Specifies whether to turn *on* or *off* the automatic switch back from secondary to primary if the primary reference is lost, the clock switches to the secondary, and the primary signal is restored.

RIB TYPE

If **CLOCK REFERENCE SOURCE** is *external*, specifies the type of external reference being used to be *t1*, *e1*, or *64kcc*.

SECONDARY REFERENCE MODULE ADDRESS

If **CLOCK REFERENCE SOURCE** is *line*, specifies the module address of an AI or FRM-M2 module residing in a Series M2 Shelf. The module address must be different from that specified for **PRIMARY REFERENCE MODULE ADDRESS**.

The specified module must be administered along with a port that is administered as port number 1. Both the module and the port number administered as port number 1 must be in service for it be a valid reference.

If the primary reference module is unavailable, the STR4 automatically switches to the secondary reference module for its timing signal.

STRATUM 4 CLOCK OUTPUT FREQUENCY

If **CLOCK REFERENCE SOURCE** is *line* or *none* or if **CLOCK REFERENCE SOURCE** is *external* and **RIB TYPE** is *64kcc*, specifies the frequency of the output signal that the Stratum 4 Clock is to supply to other modules that use it as a timing reference. If **RIB TYPE** is *t1* or *e1*, the output frequency is automatically set to match the **RIB TYPE**.

```
CC0> enter
OBJECTS [...str4...]: str4
CLOCK REFERENCE SOURCE [line, external, none]: line
PRIMARY REFERENCE MODULE ADDRESS [module address]: 32
SECONDARY REFERENCE MODULE ADDRESS [module address, none: +(none)]: 6
REFERENCE REVERSION [off, on: +(off)]: on
WARNING: It is not recommended to configure reference reversion on.
STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(t1)]: t1
CC0>
```

SCREEN 4-152. Prompted Entry: Entering STR4 Clock Information (Line Timing Source)

```
CC0> enter
OBJECTS [...str4...]: str4
CLOCK REFERENCE SOURCE [line, external, none]: external
RIB TYPE [t1, e1, 64kcc: +(t1)]: t1
FRAMING FORMAT [d4, esf: +(esf)]: esf
PRIMARY RIB [a, b: +(a)]: a
REFERENCE REVERSION [off, on: +(off)]: off

INFO: STRATUM 4 CLOCK OUTPUT FREQUENCY will be configured to match RIB TYPE.
CC0>
```

SCREEN 4-153. Prompted Entry: Entering STR4 Clock Information (External Timing Source)

enter str4

```
CC0> enter
OBJECTS [...str4...]: str4
CLOCK REFERENCE SOURCE [line, external, none]: none
WARNING: No clock reference source is entered.
        The str4 will be in free-running mode.
STRATUM 4 CLOCK OUTPUT FREQUENCY [t1, e1: +(t1)]: e1
CC0>
```

SCREEN 4-154. Prompted Entry: Entering STR4 Clock Information (No Timing Source)

remove str4 (BNS-2000 only)

The **remove str4** command takes the Stratum 4 Clock (STR4) complex and/or its components out of service. The STR4 synchronizes its timing to either an external Central Office timing source, a line timing source, or an internal oscillator. The STR4 consists of two independent sync units which provide the clocking and two timing reference sources, a primary and a secondary. If neither reference source is available, the STR4 defaults to a free-running mode of 1.544 (2.048) MHz.

The entire STR4 complex can be removed from service, or merely one component. If the STR4 is configured with a **CLOCK REFERENCE SOURCE** of *none*, only the complex and sync units can be removed from service. If its **CLOCK REFERENCE SOURCE** is *external*, its Reference Input Boards (RIBs) can be removed from service as well. If its **CLOCK REFERENCE SOURCE** is *line*, two service states are involved for each reference. One service state is that of the line reference as part of the Stratum 4. The other service state is that of the actual port of the AI or FRM-M2 module providing the reference to the Stratum 4. Both states must be in-service for the line reference to be functional.

Removing the STR4 complex causes all components (sync units, RIBs, and references) to be removed from service. Removing a specific sync unit, RIB, or reference removes only that component from service. An active sync unit cannot be removed from service; you must switchover to the standby sync unit before removing it. If an active RIB or reference is removed from service, an automatic switchover to the standby component occurs, provided the standby component is in service at the time. If the last in-service reference is removed from service or faults, the STR4 operates without any references, causing it to go into *holdover* state. If the last in-service sync unit is removed from service or faults occur, the Stratum 4 clock is no longer operational. As a result, the entire STR4 complex, consisting of all sync units, RIBs and references, is taken out of service.

If the STR4 complex is removed from service and it is used as a timing reference by a module residing in a Series M2 Shelf, service to that M2 module is affected.

Syntax

You can input **remove str4** in prompted entry only.

```
CC0> remove
OBJECTS [...str4...]: str4
```

If CLOCK REFERENCE SOURCE is configured as "none":

```
COMPONENT [complex, sync-unit]:
```

If COMPONENT is "sync-unit":

```
SYNC UNIT [a, b]:
```

If CLOCK REFERENCE SOURCE is configured as "external":

```
COMPONENT [complex, sync-unit, rib]:
```

If COMPONENT is "sync-unit":

```
SYNC UNIT [a, b]:
```

If COMPONENT is "rib":

```
RIB [a, b]:
```

If CLOCK REFERENCE SOURCE is configured as "line":

remove str4

```
COMPONENT [complex, sync-unit, reference]:  
If COMPONENT is "sync-unit":  
    SYNC UNIT [a, b]:  
If COMPONENT is "reference":  
    REFERENCE [primary, secondary]:
```

Parameters

COMPONENT

Specifies the component to be removed as *complex*, *sync-unit*, *rib*, or *reference*. If *complex* is specified, the entire Stratum 4 complex, consisting of both sync units and both references, is removed from service.

REFERENCE

If the **CLOCK REFERENCE SOURCE** is *line*, specifies whether the reference to be removed from service is the *primary* or the *secondary* reference. It only affects the Stratum 4 reference service state; it does not affect the service state of the actual line providing the reference.

RIB

If the **CLOCK REFERENCE SOURCE** is *external*, specifies whether RIB *a* or *b* is to be removed from service.

SYNC UNIT

Specifies which sync unit (*a* or *b*) is to be removed from service.

```
CC0> remove  
OBJECTS [...str4...]: str4  
COMPONENT [complex, sync-unit, rib]: complex  
CC0>
```

SCREEN 4-155. Prompted Entry: Removing STR4 Complex from Service

```
CC0> remove  
OBJECTS [...str4...]: str4  
COMPONENT [complex, sync-unit, reference]: sync-unit  
SYNC UNIT [a, b]: a  
CC0>
```

SCREEN 4-156. Prompted Entry: Removing STR4 Sync Unit from Service (Line Timing Source)

```
CC0> remove
OBJECTS [...str4...]: str4
COMPONENT [complex, sync-unit, rib]: rib
RIB [a, b]: a
CC0>
```

SCREEN 4-157. Prompted Entry: Removing STR4 RIB from Service (External Timing Source)

```
CC0> remove
OBJECTS [...str4...]: str4
COMPONENT [complex, sync-unit, reference]: reference
REFERENCE [primary, secondary]: primary
CC0>
```

SCREEN 4-158. Prompted Entry: Removing STR4 Reference from Service (Line Timing Source)

restore str4 (BNS-2000 only)

The **restore str4** command puts the Stratum 4 Clock (STR4) complex and/or its components in service. The STR4 synchronizes its timing to either an external Central Office timing source, a line timing source, or an internal oscillator. The STR4 complex consists of two independent sync units which provide the clocking and two timing reference sources, a primary and a secondary. If neither reference source is available, the STR4 defaults to a free-running mode of 1.544 (2.048) MHz.

If the STR4 is configured with a **CLOCK REFERENCE SOURCE** of *none*, only the complex and sync units can be restored to service. If its **CLOCK REFERENCE SOURCE** is *external*, its Reference Input Boards (RIBs) can be restore to service as well. If its **CLOCK REFERENCE SOURCE** is *line*, two service states are involved for each reference. One service state is that of the line reference as part of the Stratum 4. The other service state is that of the actual port of the AI or FRM-M2 module providing the reference to the Stratum 4. Both states must be in-service for the line reference to be functional.

The **restore** command allows the entire STR4 complex to be put into service or an individual sync unit, RIB, or reference to be restored. However, if the complex is out of service, only the entire complex can be restored, not individual components. All sync units, RIBs, and references are put into service when the complex is restored. If the complex is in service, individual sync units, RIBs, and references can be removed and restored to service.

When the STR4 complex (and all components) are restored to service, the active sync unit and reference are chosen. The sync unit on the active switch becomes the active sync unit. For line timing, the active reference is the one configured as the **PRIMARY REFERENCE MODULE ADDRESS**. For external timing, the active RIB is the one configured as the **PRIMARY RIB**.

Syntax

You can input **restore str4** in prompted entry only.

```
CC0> restore
OBJECTS [...str4...]: str4
```

If the Stratum 4 complex is out of service:

```
COMPONENT [complex]:
```

If the Stratum 4 complex is in service:

If CLOCK REFERENCE SOURCE is configured as "none":

```
COMPONENT [complex, sync-unit]:
```

If COMPONENT is "sync-unit":

```
SYNC UNIT [a, b]:
```

If CLOCK REFERENCE SOURCE is configured as "external":

```
COMPONENT [complex, sync-unit, rib]:
```

If COMPONENT is "sync-unit":

```
SYNC UNIT [a, b]:
```

If COMPONENT is "rib":

```
RIB [a, b]:
```

If CLOCK REFERENCE SOURCE is configured as "line":

COMPONENT [**complex**, **sync-unit**, **reference**]:
 If *COMPONENT* is "sync-unit":
SYNC UNIT [**a**, **b**]:
 If *COMPONENT* is "reference":
REFERENCE [**primary**, **secondary**]:

Parameters

COMPONENT

Specifies the component to be restored to service as *complex*, *sync-unit*, *rib*, or *reference*. If *complex* is specified, the entire Stratum 4 clock, including both sync units and both references is restored to service.

REFERENCE

If the **CLOCK REFERENCE SOURCE** is *line* and the Stratum 4 complex is in service, specifies the reference to be restored to service as the *primary* or the *secondary* reference.

RIB

If the **CLOCK REFERENCE SOURCE** is *external* and the Stratum 4 complex is in service, specifies whether RIB *a* or *b* is to be restored to service.

SYNC UNIT

If the Stratum 4 complex is in service, specifies whether sync unit *a* or *b* is to be restored to service.

```
CC0> restore
OBJECTS [...str4...]: str4
COMPONENT [complex]: complex
CC0>
```

SCREEN 4-159. Prompted Entry: Restoring STR4 Complex to Service

```
CC0> restore
OBJECTS [...str4...]: str4
COMPONENT [complex, sync-unit, reference]: sync-unit
SYNC UNIT [a, b]: a
CC0>
```

SCREEN 4-160. Prompted Entry: Restoring STR4 Sync Unit to Service (Line Timing Source)

restore str4

```
CC0> restore
OBJECTS [...str4...]: str4
COMPONENT [complex, sync-unit, rib]: rib
RIB [a, b]: a
CC0>
```

SCREEN 4-161. Prompted Entry: Restoring STR4 RIB to Service (External Timing Source)

```
CC0> restore
OBJECTS [...str4...]: str4
COMPONENT [complex, sync-unit, reference]: reference
REFERENCE [primary, secondary]: primary
CC0>
```

SCREEN 4-162. Prompted Entry: Restoring STR4 Reference to Service (Line Timing Source)

switchover str4 (BNS-2000 only)

The **switchover str4** command enables you to change the active sync unit or clock reference of a Stratum 4 Clock (STR4). The standby sync unit or clock reference must be in service and not faulted for this command to succeed. The references may be line or external (RIB).

Syntax

You can input **switchover str4** in prompted or one-line entry.

```
CC0> switchover
OBJECTS [...str4...]: str4
COMPONENT [sync-unit, reference]:
```

Parameters

COMPONENT

Allows the user to select whether to switchover the sync unit or clock reference.

```
CC0> switchover
OBJECTS [...str4...]: str4
COMPONENT [sync-unit, reference]: sync-unit
<system responses>
CC0>
```

SCREEN 4-163. Prompted Entry: Switching Over the Stratum 4 Clock Sync Unit

```
CC0> switchover str4 sync-unit
```

SCREEN 4-164. One-line Entry: Switching Over the Stratum 4 Clock Sync Unit

switchover str4

```
CC0> switchover
OBJECTS [...str4...]: str4
COMPONENT [sync-unit, reference]: reference
<system responses>
CC0>
```

SCREEN 4-165. Prompted Entry: Switching Over the Stratum 4 Clock Reference

```
CC0> switchover str4 reference
```

SCREEN 4-166. One-line Entry: Switching Over the Stratum 4 Clock Reference

verify str4 (BNS-2000 only)

The output of the **verify str4** command enables you to check information entered in the database for the Stratum 4 Clock (STR4).

If the STR4 complex is out of service, all the components (sync units and RIBs) will have *n/a* for their service states. When the STR4 complex is put into service, all components will initially be put into the *in* service state. If, while the complex is in service, a component is manually removed from service or it faults, its service state will change to *out (manual)* or *out (fault)*, respectively. The sync unit and RIB that are denoted by *(active)* are the currently active ones.

Syntax

You can input **verify str4** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...str4...]: str4
```

Parameters

None.

```
CC0> verify
OBJECTS [...str4...]: str4
<report output>
```

SCREEN 4-167. Prompted Entry: Verifying STR4 Clock Information

```
CC0> verify str4
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify str4

COMPLEX SERVICE STATE: in
SYNC UNIT A SERVICE STATE: in (active)
SYNC UNIT B SERVICE STATE: out (manual)
CLOCK REFERENCE SOURCE: none
STRATUM 4 CLOCK OUTPUT FREQUENCY: t1
CC0>
```

SCREEN 4-168. One-line Entry/Output: Verifying STR4 Clock Information (No Timing Source)


```
CC0> verify str4
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify str4

COMPLEX SERVICE STATE: in
SYNC UNIT A SERVICE STATE: in (active)
SYNC UNIT B SERVICE STATE: in
CLOCK REFERENCE SOURCE: line
REFERENCE REVERSION: off
STRATUM 4 CLOCK OUTPUT FREQUENCY: t1

PRIMARY REFERENCE MODULE ADDRESS: 98
PORT SERVICE STATE: in
PRIMARY REFERENCE SERVICE STATE: in (active)

SECONDARY REFERENCE MODULE ADDRESS: 28
PORT SERVICE STATE: rfs
SECONDARY REFERENCE SERVICE STATE: in
CC0>
```

SCREEN 4-169. One-line Entry/Output: Verifying STR4 Clock Information (Line Timing Source)

```
CC0> verify str4
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify str4

COMPLEX SERVICE STATE: in
SYNC UNIT A SERVICE STATE: in (active)
SYNC UNIT B SERVICE STATE: in
CLOCK REFERENCE SOURCE: external
REFERENCE REVERSION: on
STRATUM 4 CLOCK OUTPUT FREQUENCY: t1

RIB TYPE: t1
FRAMING FORMAT: esf
PRIMARY RIB: a
RIB A SERVICE STATE: in (active)
RIB B SERVICE STATE: out (fault)
CC0>
```

SCREEN 4-170. One-line Entry/Output: Verifying STR4 Clock Information (T1 External Timing Source)

```
CC0> verify str4
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  verify str4

COMPLEX SERVICE STATE: out
SYNC UNIT A SERVICE STATE: n/a
SYNC UNIT B SERVICE STATE: n/a
CLOCK REFERENCE SOURCE: external
REFERENCE REVERSION: off
STRATUM 4 CLOCK OUTPUT FREQUENCY: e1

RIB TYPE: 64Kcc
PRIMARY RIB: b
RIB A SERVICE STATE: n/a
RIB B SERVICE STATE: n/a
CC0>
```

SCREEN 4-171. One-line Entry/Output: Verifying STR4 Clock Information (64Kcc External Timing Source)

Report Fields

This table correlates each report field heading shown in the output of **verify str4** to the parameter for which you are prompted in **enter str4** or **change str4**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	Corresponding Parameter Name
CLOCK REFERENCE SOURCE	CLOCK REFERENCE SOURCE
COMPLEX SERVICE STATE	N/A: whether the Stratum 4 complex is in service or out of service
FRAMING FORMAT	FRAMING FORMAT
PRIMARY RIB	PRIMARY RIB
PRIMARY REFERENCE MODULE ADDRESS	PRIMARY REFERENCE MODULE ADDRESS
PRIMARY REFERENCE SERVICE STATE	N/A: whether primary reference is in service, out of service or n/a
RIB A SERVICE STATE	N/A: whether RIB 'a' is in service, out of service or n/a
RIB B SERVICE STATE	N/A: whether RIB 'b' is in service, out of service or n/a
RIB TYPE	RIB TYPE
REFERENCE REVERSION	REFERENCE REVERSION
SECONDARY REFERENCE MODULE ADDRESS	SECONDARY REFERENCE MODULE ADDRESS
SECONDARY REFERENCE SERVICE STATE	N/A: whether secondary reference is in service, out of service or n/a
STRATUM 4 CLOCK OUTPUT FREQUENCY	STRATUM 4 CLOCK OUTPUT FREQUENCY
SYNC UNIT A SERVICE STATE	N/A: whether sync unit 'a' is in service, out of service or n/a
SYNC UNIT B SERVICE STATE	N/A: whether sync unit 'b' is in service, out of service or n/a

System Responses

This section contains system responses for the **str4** commands used for the Stratum 4 Clock in nodes with Extended Switches. For responses on nodes not equipped with Extended Switches, refer to the section of system responses for the **ssm4** commands. This section is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Cannot delete str4 if modules are using str4 as clock source.

Information regarding the Stratum 4 clock cannot be deleted if Series M2 Shelf modules are using the STR4 as their timing source.

Cannot delete str4 while it is in service.

The Stratum 4 complex must be removed from service before information can be deleted from the database.

Cannot enter str4 in a node with a single switch configured.

Use change node to configure a redundant switch.

In order to enter an STR4 Stratum 4 Clock, the node must be configured to support redundant switching. However, both switches are not required to be physically present. Using the **change node** command, configure **REDUNDANT SWITCH** to be **yes**.

Configuration cannot be changed while STR4 is in service and it's clock reference source is set to none.

An attempt was made to change the configuration of the Stratum 4 clock while it was in service. Remove the Stratum 4 complex and re-run the command. If the Stratum 4 clock reference source is "line" or "external", certain configuration parameters can be changed while it is in service.

No references are configured.

The switchover failed because the clock reference source was configured as *none*.

No secondary reference is configured.

The switchover failed because the secondary reference module address was configured as *none*.

No switch configuration in database.

A serious database error has occurred that has resulted in the switch configuration in the database being inaccessible. Contact your local support group.

Secondary reference cannot be changed to none with STR4 reference in service.

An attempt was made to change the configuration while the STR4 reference was in service. A value of none for the secondary reference is not allowed while the STR4 reference is in-service. Remove the reference first if this change is desired, and then restore the reference after the change.

COMMAND FAILED:

Secondary reference will not take effect until STR4 reference is restored to service.

A change was made to an out-of-service reference for an in-service STR4 complex. The reference must be restored to service after the change for it to become operational.

Standby reference module <num> is not configured.

The switchover failed because the standby reference module is not configured in the database.

Standby reference module <num> is not in service.

The switchover failed because the standby reference module is not in service.

Standby reference module <num> port 1 is not configured.

The switchover failed because port 1 of the the standby reference module is not configured in the database.

Standby reference module <num> port 1 is not in service.

The switchover failed because port 1 of the the standby reference module is not in service.

Standby <sync-unit/rib/reference> is not in service.

The switchover failed because the standby sync-unit, rib, or reference is not in service.

STR4 is not configured.

The diagnostic cannot run because the Stratum 4 clock was not administered in the database.

INPUT ERROR:

Module <addr> is not entered.

The specified module address was not administered in the database and therefore cannot be used as a primary or secondary reference module address.

Module <addr> is not T1 AI or T1/E1 FRM-M2 as expected.

The specified module address being assigned as the primary or secondary reference module address is not a T1 AI or T1/E1 FRM-M2 module type.

Module <addr> is already used as the primary reference module address.

The specified module address has been designated for the primary reference module address.

Node is equipped with an SSM4, not an STR4 Stratum 4 clock.

Please use <change/delete/diagnose/dstat/remove/restore/verify> ssm4 instead of this command.

The node is not equipped with Extended Switches and an STR4 Stratum 4 clock. The str4 commands cannot be used. Please refer to the ssm4 command set.

Node is equipped with an SSM4, not an STR4 Stratum 4 clock.

The switchover command cannot be used with an SSM4 clock.

The node is not equipped with Extended Switches and an STR4 Stratum 4 clock. The switchover str4 command cannot be used.

INPUT ERROR:**Not an allowed Value:** *value*

The input, *value*, is not allowed.

Number expected.

The input must be a numeral.

Number or none expected.

The input must be a numeral or the word "none".

Shelf must exist before administering or accessing a module.

The module cannot be administered because the shelf is not administered in the database.

Slot is reserved.

The specified module address is being used by another module.

SSM4 is already entered.

An SSM4 Stratum 4 clock was already administered in the database.

STR4 is already entered.

An STR4 Stratum 4 clock was already administered in the database.

STR4 is not entered.

The Stratum 4 clock was not administered in the database.

INFO:**STRATUM 4 CLOCK OUTPUT FREQUENCY will be configured to match RIB TYPE.**

The Stratum 4 clock output frequency parameter has been automatically configured to whatever the RIB type has been set to. This occurs when the clock reference source is "external" and the RIB type is either "t1" or "e1".

NO KEY PHRASE:**DATABASE BEING MODIFIED - TRY AGAIN LATER**

The command process cannot continue because the database is being changed. Wait a while and retry the command.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file was removed from the disk.) Contact your local support group.

STR4 must be out of service for on-line diagnostics.

Use **remove str4** to take the Stratum 4 complex out of service so the diagnostics can be run.

REMOVE/RESTORE FAILED:

could not send message to config.

The command processor was unable to send a message to the configuration process.

STR4 complex is already <in service/out of service>.

The Stratum 4 complex is already in the requested service state.

STR4 is not present.

The Stratum 4 clock has not been installed.

STR4 reference <primary/secondary> is already <in service/out of service>.

The specified line reference is already in the requested service state.

STR4 rib <a/b> is already <in service/out of service>.

The specified rib is already in the requested service state.

STR4 sync-unit <a/b> is already <in service/out of service>.

The specified sync-unit is already in the requested service state.

Stratum 4 is not entered in the database

The Stratum 4 clock was not administered in the database.

Sync-unit <a/b> is not in standby state.

A request was made to remove the active sync-unit, and this is not allowed. If this is the last sync-unit in-service, remove the complex.

system too busy. Try again later.

The system has a heavy processing load.

SWITCHOVER FAILED:

Auto switchover has already occurred.

A previous Stratum 4 clock failure occurred. Only one sync unit or reference is in service. The switchover cannot occur.

Standby reference has signal errors. Cannot switch to it.

A switchover was requested to a reference that is LOS, AIS, or OOF; so it cannot provide a suitable reference.

Standby <sync-unit/reference>error - replace and restore standby.

Replace the standby sync-unit or reference and restore it to service.

STR4 complex is out of service.

Switchover failed because the Stratum 4 complex is out of service.

Switchover failed; could not send message to stat.

The switchover operation failed because of an internal software problem.

REMOVE/RESTORE FAILED:**Switchover not allowed with reversion configured on.**

The STR4 complex is configured to have reversion on; meaning the primary reference is to be used if it is valid. An attempt to switch to the secondary reference would result in an immediate reversion to the primary; so, it is not allowed. The reversion can be set to off if this switchover is needed.

System did not respond; state unknown.

The command cannot continue because the system does not know the service state of the specified component.

System too busy to process command. Try again later.

Retry the command in a few minutes.

WARNING:**Cannot send message to stat.**

The command processor was unable to send a message to the stat process.

It is not recommended to configure reference reversion on.

Reference reversion has been configured as "on". This is permitted, but not recommended.

Module <addr> port 1 is not entered.

Port 1 of the specified module address was not administered in the database.

Modules and/or ports driving the str4 are out of service.**The str4 will be in free-running mode.**

Since the specified reference modules and/or ports are not in service, the Stratum 4 clock defaults to a free running state of 1.544 (2.048) MHz.

No clock reference source is entered.**The str4 will be in free-running mode.**

Because a clock reference source of "none" was configured, the Stratum 4 clock defaults to its free running mode of 1.544 (2.048) MHz.

No RIBs remain in service.**Stratum 4 is going into holdover mode.**

The last remaining in service RIB has been removed from service. This has caused the Stratum 4 to go into holdover mode since it has no active references.

No sync units remain in service.**Stratum 4 complex is being removed from service.**

The last remaining in service sync unit has been removed from service. This has caused the entire Stratum 4 complex to be removed from service since the clock cannot function without an in service sync unit.

Port 1 of both referenced AI/FRM-M2 are not entered**STR4 is in free-running state.**

Because port 1 of both primary and secondary reference modules are not configured, the STR4 defaults to its free running mode of 1.544 (2.048) MHz.

WARNING:

Primary and secondary reference modules do not exist.

Stratum 4 is in free-running state.

The modules configured as both the primary and secondary clock reference source are configured and therefore cannot be used as references. The Stratum 4 defaults to its free running mode of 1.544 (2.048) MHz.

Primary and Secondary reference modules are not in service.

Stratum 4 is in free-running state.

The modules configured as both the primary and secondary clock reference sources are not in service and therefore will not be used as references. The Stratum 4 defaults to its free running mode of 1.544 (2.048) MHz.

Primary reference has been changed, this may result in a reference switchover.

If the primary RIB or line reference was the active reference, changing the primary RIB may result in a reference switchover.

Primary/secondary reference has not been entered as facility timing

Port 1 of the primary and secondary reference modules must be configured for facility timing. These ports are not permitted to use the Stratum 4 clock to derive its timing.

<Primary/Secondary> reference module does not exist.

The module configured as the primary or secondary clock reference source is not yet configured and therefore cannot be used as a reference.

<Primary/Secondary> reference module is not in service.

The module configured as either the primary or secondary clock reference source is not in service and therefore will not be used as a reference.

Stratum 4 is being referenced. <modtype(s)> service will be affected.

Because the specified module type(s) receive their timing from the Stratum 4 clock, service to those module are affected if the Stratum 4 is removed from service. The <modtype(s)> specified can be one or more of the following: *AIT1*, *AIE1*, *ADST3*, *ADSE3*, *FRM-M2*, *TRKT1*, *TRKT3A*, *TRKE3A*.

switch command set

This command set is used to view the status of and control the service state of the Switch modules. In BNS-2000 nodes, the Switch module is the *switch* or the *xswitch*. In BNS-2000 VCS nodes, the Switch module is the *eswitch*.

Operation	Maintenance	Related Objects	
remove switch	dstat switch	circuits	module
restore switch		connections	node
switchover switch		hardware	shelf

dstat switch

The **dstat switch** command enables you to display the status of the active and/or standby Switch module.

Syntax

You can input **dstat switch** in prompted or one-line entry.

```
CC0> dstat
OBJECTS [...switch...]: switch
DETAIL [low, high: +(low)]:
```

Parameters

DETAIL

Specifies if the output is to show a limited amount of information (*low* detail) or more information (*high* detail).

```
CC0> dstat
OBJECTS [...switch...]: switch
DETAIL [low, high: +(low)]: high
<report output>
```

SCREEN 4-172. Prompted Entry: Displaying High Detail Switch Module Status

```

CC0> dstat switch high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  dstat switch high
***** MODULE 1 *****
MODULE TYPE  SERVICE TYPE  SERVICE STATE  HARDWARE ERRORS  SERIAL NUMBER
eswitch      active      in service     0                22
LAST HARDWARE ALARM
none
ONLINE  ENABLED
yes     yes
----- HIGH DETAIL -----
EXPECT  FULL    EMPTY  COMMAND  RAM    TEST
TYPE    PACKETS PACKETS PARITY   PARITY MODE
eswitch 13245   4576   0        0      no
ACTUAL  ACTUAL  EXPECT EXPECT
STAT1   STAT3   STAT1  STAT3
1       0      1      0
CC0>

```

SCREEN 4-173. One-line Entry/Output: Displaying BNS-2000 VCS Eswitch Module Status

```

CC0> dstat switch high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat switch high
*****
      SERVICE TYPE  SERVICE STATE  HARDWARE ERRORS  SERIAL NUMBER
SWITCH 1    active      in service        0                8227
SWITCH 2    standby     in service        0                8221
SWITCH 1 - LAST HARDWARE ALARM
none
SWITCH 2 - LAST HARDWARE ALARM
none
LAST SWITCHOVER                REASON FOR LAST SWITCHOVER
none                            n/a
AUDIT INCONSISTENCIES
0

      ONLINE  ENABLED
SWITCH 1    yes    yes
SWITCH 2    yes    no
----- HIGH DETAIL -----
      EXPECT  FULL  EMPTY  COMMAND  RAM  TEST
      TYPE   PACKETS PACKETS PARITY   PARITY MODE
SWITCH 1 eswitch 613917 0      0      0      no
SWITCH 2 eswitch 613917 0      0      0      no
      ACTUAL  ACTUAL  EXPECT  EXPECT
      STAT1   STAT3   STAT1   STAT3
SWITCH 1 300    20     300    20
SWITCH 2 100    20     100    20
CC0>

```

SCREEN 4-174. One-line Entry/Output: Displaying BNS-2000 VCS Redundant Eswitch Module Status

```

CC0> dstat switch high

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat switch high
*****
SWITCH  MODULE  SERVICE  SERVICE  HARDWARE  SERIAL  ENABLED
LOCATION  TYPE      TYPE      STATE    ERRORS    NUMBER
A        switch  standby  out      0          0       no
B        switch  active   in       0          56854   yes

SWITCH A - LAST HARDWARE ALARM
none

SWITCH B - LAST HARDWARE ALARM
none

LAST SWITCHOVER                REASON FOR LAST SWITCHOVER
<yy-mm-dd> <hh:mm:ss>         active switch failure

AUDIT INCONSISTENCIES
n/a

----- HIGH DETAIL -----
SWITCH  EXPECT  FULL    EMPTY    COMMAND  RAM    TEST    MEMORY
LOCATION TYPE   PACKETS PACKETS  PARITY   PARITY  MODE    MODE
A        empty  0       340      0         0       no      n/a
B        switch 340      0         0         0       no      ram

SWITCH  ACTUAL  ACTUAL  ACTUAL  EXPECT  EXPECT  EXPECT
LOCATION STAT1   STAT3   STAT4   STAT1   STAT3   STAT4
A        0      0       0       0       0       0
B       200    240     0      200    240     0

CC0>

```

SCREEN 4-175. One-line Entry/Output: Displaying High Detail BNS-2000 Redundant Switch Status

```

CC0> dstat switch high

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat switch high
*****
SWITCH  MODULE  SERVICE  SERVICE  HARDWARE  SERIAL  ENABLED
LOCATION  TYPE     TYPE     STATE    ERRORS   NUMBER
A       switch  active   in       0        57110   yes

LAST HARDWARE ALARM
none

----- HIGH DETAIL -----
EXPECT  FULL      EMPTY      COMMAND   RAM      TEST      MEMORY
TYPE    PACKETS   PACKETS    PARITY    PARITY    MODE      MODE
switch  3163      0          0         0         no        ram

ACTUAL  ACTUAL    ACTUAL     EXPECT    EXPECT    EXPECT
STAT1   STAT3     STAT4      STAT1     STAT3     STAT4
0       260      0          0         240      0

CC0>

```

SCREEN 4-176. One-line Entry/Output: Displaying High Detail BNS-2000 Single Switch Status

```

CC0> dstat switch high
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M dstat switch high
*****
SWITCH  MODULE  SERVICE  SERVICE  HARDWARE  SERIAL  ENABLED
LOCATION  TYPE      TYPE      STATE    ERRORS    NUMBER
A        xswitch  standby  in       0         98      yes
B        xswitch  active   in       0         166     yes

SWITCH A - LAST HARDWARE ALARM
none

SWITCH B - LAST HARDWARE ALARM
none

LAST SWITCHOVER          REASON FOR LAST SWITCHOVER
<yy-mm-dd><hh:mm:ss>    user request

AUDIT INCONSISTENCIES
0

----- HIGH DETAIL -----
SWITCH  EXPECT  FULL      EMPTY      COMMAND  RAM      TEST  MEMORY
LOCATION  TYPE    PACKETS   PACKETS    PARITY   PARITY   MODE  MODE
A        xswitch 124810    0          0        0        no    ram
B        xswitch 124810    0          0        0        no    ram

SWITCH  ACTUAL  ACTUAL  ACTUAL  EXPECT  EXPECT  EXPECT
LOCATION STAT1   STAT3   STAT4   STAT1   STAT3   STAT4
A        0      200     0       0       200     0
B        200    240     0       200     240     0

CC0>

```

SCREEN 4-177. One-line Entry/Output: Displaying High Detail BNS-2000 Redundant Xswitch Status

Report Fields

ACTUAL STAT1

The actual value of the hardware status byte of the most currently received status packet for the switch. For BNS-2000 VCS nodes, the actual and expected values of **STAT1** differ in some cases.

ACTUAL STAT3

The actual value of the third hardware status byte of the most recently received status packet for the switch. For BNS-2000 VCS nodes, the actual and expected values of **STAT3** differ in some cases.

ACTUAL STAT4

For BNS-2000 nodes, the actual value of the fourth hardware status byte of the most recently received status packet for the switch.

AUDIT INCONSISTENCIES

The number of audit inconsistencies since the last node boot; and if a standby switch is configured and its service state is *in service*, the numerical value of the count of errors.

When **SERVICE STATE** reads *dwnld* or *out* this field reads *n/a* on BNS-2000 output.

When **SERVICE STATE** reads *downloading; oos,manual;* or *oos,auto,fault* this field reads *n/a* on BNS-2000 VCS output.

COMMAND PARITY

For BNS-2000 nodes, the total read/write command parity errors that have occurred since the switch has been in service. For BNS-2000 VCS nodes, A count of bad command packets received. During normal operation, the module should not receive bad command packets.

See **COMMAND PACKET PARITY ERROR** alarm.

EMPTY PACKETS

The number of empty status packets received when an switch is not physically present in the shelf slot. For BNS-2000 VCS nodes, see **EMPTY SLOT** alarm.

ENABLED

For BNS-2000 nodes, shows whether (*yes* or *no*) the switch is enabled by the software. (The switch does not have a toggle switch with which it can be disabled and enabled.) For BNS-2000 VCS nodes, shows a status of *yes* if the module mode switch is in the ENABL (enable) position. This field is determined only from status information. See the **MODE SWITCH NOT ENABLED** alarm.

EXPECT STAT1

The expected value of the first hardware status byte for the switch.

EXPECT STAT3

The expected value of the third hardware status byte for the switch.

EXPECT STAT4

For BNS-2000 nodes, the expected value of the fourth hardware status byte for the switch.

EXPECT TYPE

For BNS-2000 nodes, the expected hardware type in the shelf slot is *switch* or *xswitch*. If the expected hardware type is *empty*, database information has not been configured. For BNS-2000 VCS nodes, the expected hardware type of the module in the slot. For in-service modules, this field depends on administrator supplied information. For out-of-service modules, this field is determined by status packet information. See **WRONG MODULE TYPE** alarm.

FULL PACKETS

The number of status packets containing data that the Control Computer has received. Full packets are received only when a module is physically present in the shelf slot.

HARDWARE ERROR COUNT

For BNS-2000 nodes, the total number of all switch errors detected since the switch has been in service. These errors could be module read/write command parity errors, route table parity errors, channel-out-of range errors, and module count table parity errors. For BNS-2000 VCS nodes, the approximate sum of module errors detected since the last reboot. Counts of 3 or 4 are typical for a module; higher counts indicate a problem.

Report Fields *(continued)***LAST HARDWARE ALARM**

The last alarm for the switch, based on status packet data. This data is not stored between Control Computer reboots.

LAST SWITCHOVER

The date and time of the last switchover. If a switchover did not occur, this field reads *none*.

MEMORY MODE

For BNS-2000 nodes, the switch's current memory mode could be: *ram* if it is in service; *rom* if it out of service; or *n/a* if it is not installed and configured.

MODULE TYPE

For BNS-2000 nodes, the actual type of hardware module (*switch* or *xswitch*) residing at the address specified and for which the report has been output according to status packet information received (not database polling). If a module is not physically installed, this field reads *empty*. For BNS-2000 VCS nodes, the type of hardware module (*eswitch*) residing at the address specified and for which the report has been output.

ONLINE

For BNS-2000 VCS nodes, shows a status of *yes* only if the green LED on the module is *on*. This status is determined by status packet information.

RAM PARITY

For BNS-2000 nodes, the total number of route table parity errors and module table parity errors that have occurred since the switch has been in service. For BNS-2000 VCS nodes, a count of parity errors in module RAM. See **SWITCH MEMORY PARITY ERROR** alarm.

REASON FOR LAST SWITCHOVER

For BNS-2000 nodes, the reason for the last switchover from active to standby switch could be: *user request* or *active switch failure*. If a switchover has not occurred, this field reads *n/a*. For BNS-2000 VCS nodes, the reason for the last switchover and the text of either the user request or the active switch failure. If a switchover has not occurred, this field reads *n/a*.

SERIAL NUMBER

The factory-encoded unique number appearing on the Switch module.

SERVICE STATE

The current service state of the switch. For an active switch, the service state is in service (*in*). For BNS-2000 nodes with a standby switch, the service state can be downloading (*dwnld*), in service (*in*), or out of service (*out*). For BNS-2000 VCS nodes with a standby Eswitch, the service state can be *downloading*, *in service*, *oos,manual*; or *oos,auto,fault*.

Report Fields *(continued)*

SERVICE TYPE

For BNS-2000 nodes, shows the switch to be *active* or *standby*. If the standby switch is not installed or configured, this field reads *unknown*. For BNS-2000 VCS nodes, shows Eswitch 1 or Eswitch 2 to be *active* or *standby*. Either can be *active* or *standby*.

SWITCH LOCATION

For BNS-2000 nodes, the switch slot location on the backplane is A or B.

TEST MODE

For BNS-2000 nodes, indicates if (*yes* or *no*) the switch is in test mode. During typical operation, this field only applies to the standby switch. For BNS-2000 VCS nodes, indicates if (*yes* or *no*) the Eswitch is in test mode. During typical operation, the ESwitch should not be in test mode. See the **SWITCH IN TEST MODE** alarm.

remove switch

The **remove switch** command enables you to put an in-service or downloading standby switch into the out-of-service state.

For BNS-2000 nodes, the standby switch must reside in backplane slot *a* or *b*. For BNS-2000 VCS nodes, the standby Eswitch must reside in module address 1 or 2.

Once the switch is removed from service, it cannot be switched to become the active switch until it is restored to service with **restore switch**.

When *out of service*, the standby switch has not been restored to service after it has been manually removed from service or after configuration information has been entered or changed via the **node** commands. When out of service, the standby switch does not have a copy of active switch memory; therefore it cannot be switched to become the active switch.

When the Control Computer detects an error condition in the standby switch, it automatically moves it to the *out-of-service-fault* state. The standby stops maintaining its memory; therefore its memory is not identical to that of the active switch and it can no longer be switched to become the active switch.

Syntax

You can input **remove switch** in prompted or one-line entry.

```
CC0> remove
OBJECTS [...switch...]: switch
```

For a BNS-2000 node:

```
MODULE ADDRESS [a, b]:
```

For a BNS-2000 VCS node:

```
MODULE ADDRESS [1-2]:
```

<system responses>

Parameters

MODULE ADDRESS

For BNS-2000 VCS nodes, the number 1 or 2 specifying the node slot that the standby Eswitch module occupies. For BNS-2000 nodes, the letter *a* or *b* that specifies the node slot that the standby Switch module occupies.

remove switch

```
CC0> remove
OBJECTS [...switch...]: switch
MODULE ADDRESS [a, b]: a
CC0>
```

SCREEN 4-178. Prompted Entry: Removing the BNS-2000 Switch or Extended Switch Module from Service

```
CC0> remove switch 1
```

SCREEN 4-179. One-line Entry: Removing the BNS-2000 VCS Eswitch Module from Service

restore switch

The **restore switch** command enables you to move the standby switch from an out-of-service or out-of-service-fault state to an in-service state so it is ready to be switched if needed. In the process, **restore switch** downloads the memory contents of the active switch to that of the standby switch.

During *downloading*, which can take up to five minutes, the standby switch is receiving a copy of the active switch memory. Until the module receives a copy of the active switch memory, it cannot be switched to become the active switch.

When *in service*, the standby switch has an identical copy of the active switch memory and can be switched to become the active switch. It maintains its memory so it is identical to that of the active switch. The switch enters the in-service state automatically after downloading is completed.

Syntax

You can input **restore switch** in prompted or one-line entry. On command execution, the download of the memory contents of the formerly active switch to that of the newly active switch proceeds in the background and the **CC0>** prompt appears.

```
CC0> restore
OBJECTS [...switch...]: switch
```

For a BNS-2000 node:

```
MODULE ADDRESS [a, b]:
```

For a BNS-2000 VCS node:

```
MODULE ADDRESS [1-2]:
```

<system responses>

Parameters

MODULE ADDRESS

For BNS-2000 VCS nodes, the number *1* or *2* specifying the node slot that the standby Eswitch module occupies. For BNS-2000 nodes, the letter *a* or *b* that specifies the node slot that the standby Switch module occupies.

```
CC0> restore
OBJECTS [...switch...]: switch
MODULE ADDRESS [a, b]: a
<system responses>
CC0>
```

SCREEN 4-180. Prompted Entry: Restoring the BNS-2000 Switch or Extended Switch Module to Service

restore switch

CC0> remove switch 1

SCREEN 4-181. One-line Entry: Restoring the BNS-2000 VCS Eswitch Module to Service

switchover switch

The **switchover switch** command enables you to change the in-service standby switch to the in-service active switch and simultaneously change the service state of the in-service active switch to that of in-service standby switch.

Syntax

You can input **switchover switch** in prompted or one-line entry.

```
CC0> switchover
OBJECTS [switch]: switch
<system responses>
```

Parameters

None.

```
CC0> switchover
OBJECTS [switch]: switch
<system responses>
CC0>
```

SCREEN 4-182. Prompted Entry: Switching Over the Switch Module

```
CC0> switchover switch
```

SCREEN 4-183. One-line Entry: Switching Over the Switch Module

System Responses

This section contains system responses for the **switch** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

Active switch error -

replace active switch, reboot, restore standby switch.

The active switch must be replaced. Once the switch is replaced, reboot the system and restore the standby switch.

Auto switchover has already occurred.

A previous switch failure occurred. Only one switch is active. The switchover cannot occur.

Cannot make maintenance process special.

Diagnostic processes cannot be running while the switch is being restored to service.

Cannot remove active switch in module address <addr>.

The specified switch cannot be removed from service.

Cannot switch over - standby switch <addr> is out of service.

The switchover failed because the standby switch is not in service.

Download already in progress.

The restore process failed because a download is already in progress.

Module address <addr> contains a <hardware type> module.

(<Enhanced/CMA1/CTG13> switch expected).

The specified module address does not contain the correct type of switch.

Module address <addr> contains no module.

(<Enhanced/CMA1/CTG13> switch expected).

The specified module address does not contain any hardware.

<Remove/Restore> failed; could not send message to swmaint.

The remove/restore operation cannot continue because of an internal software problem.

Retrying switchover to switch<addr> -

switch a is <service state>, switch 2 is <service state>.

The requested switchover is now proceeding.

Standby switch error - replace and restore standby switch.

Replace the standby switch and restore it to service.

Standby switch is in inconsistent state - <service state>

The standby switch is in the indicated service state.

Switch command in progress. Try again later.

Retry the command in a few minutes.

Switch in module address <addr> is already <in/out of> service.

The module located at the specified address is already in the requested service state.

COMMAND FAILED: *(continued)***Switch in module address <addr> is not entered.**

The specified module address is not configured.

Switch <addr> is downloading.

The switch is currently downloading software.

Switch <addr> is not in service.

The specified switch is out of service.

Switchover failed; could not send message to swmaint.

The switchover operation failed because of an internal software problem.

System did not respond; state unknown.

The command cannot continue because the system does not know the service state of the specified switch.

System too busy to process command. Try again later.

Retry the command in a few minutes.

Unrecoverable system error in accessing switch.

The system cannot access the switch.

INFO:**Standby switch <standby addr> is downloading.**

The command process cannot continue until the download has completed.

INPUT ERROR:**Module address <addr> contains a <hardware type> module.****(<Enhanced/CMA1/CTG13> switch expected).**

The specified module address does not contain the correct type of switch.

Not an allowed Value:

The value input is not allowed.

Switch in module address <addr> is not entered.

The switch in the specified address is not configured.

Switch <addr> is not in standby state.

The specified switch is active.

NO KEY PHRASE:**Cannot abort; <remove/restore/switchover> in progress.**

The key was pressed while the command process could not be halted.

threshold command set (BNS-2000 only)

The following commands are related to the **threshold** command set.

Administration	Related Objects
change threshold delete threshold enter threshold verify threshold	ai trunk

change threshold (BNS-2000 only)

The **change threshold** command enables you to modify information previously entered into the database for threshold profiles.

Syntax

You can input **change threshold** in prompted entry only. The command syntax for **enter threshold** and **change threshold** are similar. The **THRESHOLD PROFILE ID** parameter cannot be changed and the **TYPE OF PROFILE** prompts do not appear for all profile types.

The defaults for **change threshold** are those values, conditions, or states that currently exist in the database. However, the default shown is always *no* for the interval and tuning parameter prompts. All defaults are displayed within parentheses in the parameter prompt.

Parameters

Refer to the parameter definitions supplied in **enter threshold**.

```
CC0> change
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 1

TUNE T1 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(14)]: +
LINE ERRORED SECONDS FOR RECEIVE [1-900: +(12)]: +
LINE ERRORED SECONDS FOR TRANSMIT [1-900: +(12)]: +
LINE SEVERELY ERRORED SECONDS [1-900: +(10)]: +
CODE VIOLATION FOR RECEIVE [1-4194303: +(14)]: +
CODE VIOLATION FOR TRANSMIT [1-4194303: +(14)]: +
ERRORED SECONDS FOR RECEIVE [1-900: +(12)]: +
ERRORED SECONDS FOR TRANSMIT [1-900: +(12)]: +
SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(10)]: +
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(10)]: +
SEVERELY ERRORED FRAMING SECONDS FOR RECEIVE [1-900: +(4)]: 6
SEVERELY ERRORED FRAMING SECONDS FOR TRANSMIT [1-900: +(4)]: 6
ALARM INDICATION SIGNAL SECONDS [1-900: +(2)]: +
UNAVAILABLE SECONDS [1-900: +(12)]: 16

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(15)]: 17
CODE VIOLATION FOR TRANSMIT [1-4194303: +(15)]: 17
ERRORED SECONDS FOR RECEIVE [1-900: +(12)]: 14
ERRORED SECONDS FOR TRANSMIT [1-900: +(12)]: 14
SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(10)]: 12
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(10)]: 12
SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]: 4
UNAVAILABLE SECONDS [1-900: +(10)]: +
```

SCREEN 4-184. Prompted Entry: Changing a T1 Threshold Profile

Prompted Entry: Changing a T1 Threshold Profile *(continued)*

```
TUNE SUM OF ERRORS ALGORITHM THRESHOLDS [yes, no: +(no)]: yes
LEVEL 2 THRESHOLD [1-4194303: +(120)]: 140
LEVEL 3 THRESHOLD [1-4194303: +(40)]: 60
TUNE BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS [yes, no: +(no)]: yes
NUMBER OF RECEIVED PDUs [1-300000: +(3400)]: 3600
MINIMUM NUMBER OF ERRORED PDUs [1-30000: +(200)]: 400
RATIO THRESHOLD VALUE [1-100: +(5)]: 6
TUNE T1 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(134)]: 11
LINE ERRORED SECONDS FOR RECEIVE [1-86400: +(121)]: 11
LINE ERRORED SECONDS FOR TRANSMIT [1-86400: +(121)]: 11
LINE SEVERELY ERRORED SECONDS [1-86400: +(100)]: 11
CODE VIOLATION FOR RECEIVE [1-4194303: +(134)]: 11
CODE VIOLATION FOR TRANSMIT [1-4194303: +(134)]: 11
ERRORED SECONDS FOR RECEIVE [1-86400: +(121)]: 11
ERRORED SECONDS FOR TRANSMIT [1-86400: +(121)]: 11
SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(100)]: 11
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(100)]: 11
SEVERELY ERRORED FRAMING SECONDS FOR RECEIVE [1-86400: +(17)]: 11
SEVERELY ERRORED FRAMING SECONDS FOR TRANSMIT [1-86400: +(17)]: 11
ALARM INDICATION SIGNAL SECONDS [1-86400: +(17)]: 11
UNAVAILABLE SECONDS [1-86400: +(10)]: 11
TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(125)]: 11
CODE VIOLATION FOR TRANSMIT [1-4194303: +(125)]: 11
ERRORED SECONDS FOR RECEIVE [1-86400: +(121)]: 11
ERRORED SECONDS FOR TRANSMIT [1-86400: +(121)]: 11
SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(100)]: 11
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(100)]: 11
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(17)]: 11
UNAVAILABLE SECONDS [1-86400: +(10)]: 11
THRESHOLD PROFILE ID [1-16]: 
CC0>
```

```

CC0> change
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 2

TUNE T3 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]: +
TUNE T3 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(3865)]: +
LINE ERRORED SECONDS [1-86400: +(864)]: +
LINE SEVERELY ERRORED SECONDS [1-86400: +(50)]: 60
P-BIT PARITY CODE VIOLATION [1-4194303: +(3820)]: +
ERRORED SECONDS [1-86400: +(864)]: +
SEVERELY ERRORED SECONDS [1-86400: +(40)]: +
LINK DOWN SECONDS [1-86400: +(16)]: 22
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]: +
ALARM INDICATION SIGNAL SECONDS [1-900: +(2)]: +
UNAVAILABLE SECONDS [1-86400: +(10)]: +

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(3600)]: 3700
CODE VIOLATION FOR TRANSMIT [1-4194303: +(3600)]: 3700
ERRORED SECONDS FOR RECEIVE [1-86400: +(900)]: 1000
ERRORED SECONDS FOR TRANSMIT [1-86400: +(900)]: 1000
SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(50)]: 60
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(50)]: 60
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]: +
UNAVAILABLE SECONDS [1-86400: +(10)]: +

THRESHOLD PROFILE ID [1-16]: 
CC0>

```

SCREEN 4-185. Prompted Entry: Changing an AI-T3 Threshold Profile

```

CC0> change
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 3

TUNE T3 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(387)]: +
LINE ERRORED SECONDS [1-900: +(86)]: +
LINE SEVERELY ERRORED SECONDS [1-900: +(4)]: +
P-BIT PARITY CODE VIOLATION [1-4194303: +(382)]: +

```

SCREEN 4-186. Prompted Entry: Changing a TRK-T3I Threshold Profile

Prompted Entry: Changing a TRK-T3I Threshold Profile *(continued)*

```

ERRORED SECONDS [1-900: +(86)]: 150
SEVERELY ERRORED SECONDS [1-900: +(4)]: 150
LINK DOWN SECONDS [1-900: +(4)]: +
SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]: +
ALARM INDICATION SIGNAL SECONDS [1-900: +(2)]: 3
UNAVAILABLE SECONDS [1-900: +(10)]: +
TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(359)]: 500
CODE VIOLATION FOR TRANSMIT [1-4194303: +(359)]: 600
ERRORED SECONDS FOR RECEIVE [1-900: +(86)]: 90
ERRORED SECONDS FOR TRANSMIT [1-900: +(86)]: 90
SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(4)]: 7
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(4)]: 16
SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]: 6
UNAVAILABLE SECONDS [1-900: +(10)]: 20
TUNE SUM OF ERRORS ALGORITHM THRESHOLDS [yes, no: +(no)]: yes
LEVEL 2 ICIIP CELL SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(3000)]: 1000
LEVEL 2 ICIIP SAR SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(3000)]: 1000
LEVEL 2 ICIIP SAR SUBLAYER-INCORRECT FLDS THRESHOLD [1-4194303: +(3000)]: 1000
LEVEL 3 ICIIP CVG SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(600)]: 500
LEVEL 3 ICIIP CVG SUBLAYER-INCORRECT FLDS THRESHOLD [1-4194303: +(600)]: 500
LEVEL 3 ICIIP CLS SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(600)]: 500
LEVEL 3 ICIIP CLS SUBLAYER-ROUTING ERRS THRESHOLD [1-4194303: +(600)]: 500
TUNE T3 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: +
LINE CODE VIOLATION [1-4194303: +(0)]: 333
LINE ERRORED SECONDS [1-86400: +(0)]: 333
LINE SEVERELY ERRORED SECONDS [1-86400: +(0)]: 333
P-BIT PARITY CODE VIOLATION [1-4194303: +(0)]: 333
ERRORED SECONDS [1-86400: +(0)]: 333
SEVERELY ERRORED SECONDS [1-86400: +(0)]: 333
LINK DOWN SECONDS [1-86400: +(0)]: 333
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(0)]: 333
ALARM INDICATION SIGNAL SECONDS [1-86400: +(0)]: 333
UNAVAILABLE SECONDS [1-86400: +(0)]: 333
TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(3584)]: +
CODE VIOLATION FOR TRANSMIT [1-4194303: +(3584)]: +
ERRORED SECONDS FOR RECEIVE [1-86400: +(1000)]: 1500
ERRORED SECONDS FOR TRANSMIT [1-86400: +(1000)]: 1500
SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(40)]: +
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(40)]: +
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]: +
UNAVAILABLE SECONDS [1-86400: +(10)]: +
THRESHOLD PROFILE ID [1-16]: 
CC0>

```

```

CC0> change
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 3

TUNE T3 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(387)]: +
LINE ERRORED SECONDS [1-900: +(86)]: +
LINE SEVERELY ERRORED SECONDS [1-900: +(4)]: +
CODE VIOLATION FOR RECEIVE [1-4194303: +(382)]: 1
CODE VIOLATION FOR TRANSMIT [1-4194303: +(382)]: 1
ERRORED SECONDS FOR RECEIVE [1-900: +(86)]: 1
ERRORED SECONDS FOR TRANSMIT [1-900: +(86)]: 1
SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(4)]: +
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(4)]: +
SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]: +
ALARM INDICATION SIGNAL SECONDS [1-900: +(2)]: 4
UNAVAILABLE SECONDS [1-900: +(10)]: +

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(359)]: 1
CODE VIOLATION FOR TRANSMIT [1-4194303: +(359)]: 1
ERRORED SECONDS FOR RECEIVE [1-900: +(86)]: 1
ERRORED SECONDS FOR TRANSMIT [1-900: +(86)]: 1
SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(4)]: +
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(4)]: +
SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]: +
ALARM INDICATION SIGNAL SECONDS [1-900: +(2)]: 4
UNAVAILABLE SECONDS [1-900: +(10)]: +

TUNE ATM LEVEL PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CELLS DISCARDED DUE TO HEC VIOLATIONS [1-4194303: +(600)]: +
CELLS DISCARDED DUE TO ATM LAYER HEADER ERRORS [1-900: +(40)]: +

TUNE T3 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: +
TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(3584)]: +
CODE VIOLATION FOR TRANSMIT [1-4194303: +(3584)]: +
ERRORED SECONDS FOR RECEIVE [1-86400: +(1000)]: +
ERRORED SECONDS FOR TRANSMIT [1-86400: +(1000)]: +
SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(40)]: +
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(40)]: +
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(10)]: +
UNAVAILABLE SECONDS [1-86400: +(10)]: +
THRESHOLD PROFILE ID [1-16]:
CC0>

```

SCREEN 4-187. Prompted Entry: Changing a TRK-T3A Threshold Profile

delete threshold (BNS-2000 only)

The **delete threshold** command enables you to delete a threshold profile in the database. (A range of profile IDs cannot be deleted.)

If any module or port currently references a profile ID, that profile ID cannot be deleted unless the AI port or trunk module changes its profile ID to a different profile ID.

Syntax

You can input **delete threshold** in prompted or one-line entry.

```
CC0> delete
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]:
```

Parameters

Refer to the parameter definitions supplied in **enter threshold**.

```
CC0> delete
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 1
CC0>
```

SCREEN 4-188. Prompted Entry: Deleting a Threshold Profile

```
CC0> delete threshold 1
```

SCREEN 4-189. One-line Entry: Deleting a Threshold Profile

enter threshold (BNS-2000 only)

The **enter threshold** command enables you to add information for threshold profiles into the database.

A total of 16 threshold profiles can be created to adjust, or *tune*, the limits of the performance parameters. In certain configurations, **threshold** commands can be used to tune the algorithm for calculating and totaling performance errors. The data gathered is used for maintenance measurements and to generate alarms.

For measurements collection, data being monitored at 15-minute intervals is saved every 15 minutes and is kept for up to 8 hours. Data being monitored at 24-hour intervals is saved every 24 hours at midnight and is kept for up to 24 hours. Data can be requested for the current or previous interval.

For alarm generation, data is monitored at the specified 15-minute or 24-hour interval. If a specified threshold is crossed, an alarm is generated once for the specified interval.

If error rates do not have to be monitored and tuned, a system-supplied profile, called *default*, exists for the AI and trunk modules. To use this profile, specify the key word *default* at the **THRESHOLD PROFILE ID** parameter during the **enter ai** or **enter trunk** commands prompting sequence. The default profile cannot be changed or deleted.

Syntax

You can input **enter threshold** in prompted entry only. When first creating a threshold profile, the prompting sequence depends on the response to the **PROFILE TYPE**, **MODULE TYPE**, **TRUNK TYPE**, and a set of tuning parameters.

Profiles can be created for the AI-E1, AI-E3, AI-T1, AI-T3, or AI-T3P, or for the TRK-E3, TRK-E3A, TRK-E3S, TRK-T3, TRK-T3A, TRK-T3I, or TRK-T3S by specifying *e1* or *e3* or *t1* or *t3* at the **TYPE OF PROFILE** prompt. If the **TYPE OF PROFILE** is *e1* or *t1*, the system knows that the profile is for an AI-E1 or AI-T1 module. If the **TYPE OF PROFILE** is *e3* or *t3*, the system prompts for **MODULE TYPE**. If the **MODULE TYPE** is *ai*, the system knows that the profile is for AI-E3 or AI-T3 and the **ai** type is set accordingly. If the **MODULE TYPE** is *trunk*, the system prompts for **TRUNK TYPE**. It will accept *e3*, *e3a*, *e3s*, *t3*, *t3a*, *t3i* or *t3s* as **TRUNK TYPES**.

Defaults are shown in parentheses.

```
CC0> enter
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]:
TYPE OF PROFILE [e1, e3, t1, t3]:

If TYPE OF PROFILE is "e3" or "t3":
  MODULE TYPE [ai, trunk]:

If MODULE TYPE is "trunk" and the TYPE OF PROFILE is "e3":
  TRUNK TYPE [e3, e3a, e3s]:

If MODULE TYPE is "trunk" and the TYPE OF PROFILE is "t3":
  TRUNK TYPE [t3, t3a, t3i, t3s]:
```

enter threshold

Syntax (continued)

If TYPE OF PROFILE is "e1" or "t1":

TUNE <E1/T1> 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]:

If TUNE <E1/T1> 15 MINUTE INTERVAL PARAMETERS is "yes":

TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE LAYER PERFORMANCE THRESHOLDS is "yes":

If TYPE OF PROFILE is "t1":

LINE CODE VIOLATION [1-4194303: +(14)]:

LINE ERRORED SECONDS FOR RECEIVE [1-900: +(12)]:

LINE ERRORED SECONDS FOR TRANSMIT [1-900: +(12)]:

LINE SEVERELY ERRORED SECONDS [1-900: +(10)]:

If TYPE OF PROFILE is "e1" or "t1"

CODE VIOLATION FOR RECEIVE [1-4194303: +(14)]:

CODE VIOLATION FOR TRANSMIT [1-4194303: +(14)]:

ERRORED SECONDS FOR RECEIVE [1-900: +(12)]:

ERRORED SECONDS FOR TRANSMIT [1-900: +(12)]:

SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(10)]:

SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(10)]:

SEVERELY ERRORED FRAMING SECONDS FOR RECEIVE [1-900: +(2)]:

If TYPE OF PROFILE is "t1"

SEVERELY ERRORED FRAMING SECONDS FOR TRANSMIT [1-900: +(2)]:

If TYPE OF PROFILE is "e1" or "t1":

ALARM INDICATION SIGNAL SECONDS [1-900: +(2)]:

UNAVAILABLE SECONDS [1-900: +(10)]:

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS is "yes":

CODE VIOLATION FOR RECEIVE [1-4194303: +(14)]:

CODE VIOLATION FOR TRANSMIT [1-4194303: +(14)]:

ERRORED SECONDS FOR RECEIVE [1-900: +(12)]:

ERRORED SECONDS FOR TRANSMIT [1-900: +(12)]:

SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(10)]:

SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(10)]:

SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]:

UNAVAILABLE SECONDS [1-900: +(10)]:

TUNE SUM OF ERRORS ALGORITHM THRESHOLDS [yes, no: +(no)]:

If TUNE SUM OF ERRORS ALGORITHM THRESHOLDS is "yes":

LEVEL 2 THRESHOLD [1-4194303: +(100)]:

LEVEL 3 THRESHOLD [1-4194303: +(20)]:

TUNE BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS [yes, no: +(no)]:

If TUNE BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS is "yes":

NUMBER OF RECEIVED PDUs [1-300000: +(3300)]:

MINIMUM NUMBER OF ERRORED PDUs [1-30000: +(100)]:

RATIO THRESHOLD VALUE [1-100: +(4)]:

Syntax *(continued)*

If TYPE OF PROFILE is "e1" or "t1":

TUNE <E1/T1> 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]:

If TUNE <E1/T1> 24 HOUR INTERVAL PARAMETERS is "yes":

TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE LAYER PERFORMANCE THRESHOLDS is "yes":

If TYPE OF PROFILE is "t1":

LINE CODE VIOLATION [1-4194303: +(134)]:

LINE ERRORED SECONDS FOR RECEIVE [1-86400: +(121)]:

LINE ERRORED SECONDS FOR TRANSMIT [1-86400: +(121)]:

LINE SEVERELY ERRORED SECONDS [1-86400: +(100)]:

If TYPE OF PROFILE is "e1" or "t1":

CODE VIOLATION FOR RECEIVE [1-4194303: +(134)]:

CODE VIOLATION FOR TRANSMIT [1-4194303: +(134)]:

ERRORED SECONDS FOR RECEIVE [1-86400: +(121)]:

ERRORED SECONDS FOR TRANSMIT [1-86400: +(121)]:

SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(100)]:

SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(100)]:

SEVERELY ERRORED FRAMING SECONDS FOR RECEIVE [1-86400: +(17)]:

If TYPE OF PROFILE is "t1":

SEVERELY ERRORED FRAMING SECONDS FOR TRANSMIT [1-86400: +(17)]:

If TYPE OF PROFILE is "e1" or "t1":

ALARM INDICATION SIGNAL SECONDS [1-86400: +(17)]:

UNAVAILABLE SECONDS [1-86400: +(10)]:

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS is "yes":

CODE VIOLATION FOR RECEIVE [1-4194303: +(125)]:

CODE VIOLATION FOR TRANSMIT [1-4194303: +(125)]:

ERRORED SECONDS FOR RECEIVE [1-86400: +(121)]:

ERRORED SECONDS FOR TRANSMIT [1-86400: +(121)]:

SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(100)]:

SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(100)]:

SEVERELY ERRORED FRAMING SECONDS [1-86400: +(17)]:

UNAVAILABLE SECONDS [1-86400: +(10)]:

enter threshold

Syntax (continued)

If TYPE OF PROFILE is "e3" or "t3":

TUNE <E3/T3> 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]:

If TUNE <E3/T3> 15 MINUTE INTERVAL PARAMETERS is "yes":

TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE LAYER PERFORMANCE THRESHOLDS is "yes":

If ai-type is "t3" or if TRUNK TYPE is not "e3" or "e3s":

LINE CODE VIOLATION [1-4194303: +(387)]:

LINE ERRORED SECONDS [1-900: +(86)]:

LINE SEVERELY ERRORED SECONDS [1-900: +(4)]:

If TRUNK TYPE is "t3a":

CODE VIOLATION FOR RECEIVE [1-4194303: +(382)]:

CODE VIOLATION FOR TRANSMIT [1-4194303: +(382)]:

If TRUNK TYPE is "e3a":

ERRORED BLOCKS FOR RECEIVE [1-4194303: +(3120)]:

ERRORED BLOCKS FOR TRANSMIT [1-4194303: +(3120)]:

BACKGROUND BLOCK ERRORS FOR RECEIVE [1-4194303: +(1000)]:

BACKGROUND BLOCK ERRORS FOR TRANSMIT [1-4194303: +(1000)]:

If TRUNK TYPE is "e3a" or "t3a":

ERRORED SECONDS FOR RECEIVE [1-900: +(86)]:

ERRORED SECONDS FOR TRANSMIT [1-900: +(86)]:

SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(4)]:

SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(4)]:

If ai-type is "t3" or TRUNK TYPE is "t3", "t3i", or "t3s":

P-BIT PARITY CODE VIOLATION [1-4194303: +(382)]:

ERRORED SECONDS [1-900: +(86)]:

SEVERELY ERRORED SECONDS [1-900: +(4)]:

LINK DOWN SECONDS [1-900: +(4)]:

If MODULE TYPE is "ai" or "trunk":

SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]:

ALARM INDICATION SIGNAL SECONDS [1-900: +(2)]:

UNAVAILABLE SECONDS [1-900: +(10)]:

If TRUNK TYPE is not "e3a":

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS is "yes":

CODE VIOLATION FOR RECEIVE [1-4194303: +(359)]:

CODE VIOLATION FOR TRANSMIT [1-4194303: +(359)]:

ERRORED SECONDS FOR RECEIVE [1-900: +(86)]:

ERRORED SECONDS FOR TRANSMIT [1-900: +(86)]:

SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(4)]:

SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(4)]:

SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]:

UNAVAILABLE SECONDS [1-900: +(10)]:

Syntax (continued)

If MODULE TYPE is "trunk" and TRUNK TYPE is "t3a" or "e3a":

TUNE ATM LEVEL PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE ATM LEVEL PERFORMANCE THRESHOLDS is "yes":

CELLS DISCARDED DUE TO HEC VIOLATIONS [1-4194303: +(100)]:

CELLS DISCARDED DUE TO ATM LAYER HEADER ERRORS [1-900: +(2)]:

If TRUNK TYPE is "e3a":

OUT OF CELL DELINEATION ANOMALIES [1-4194303: +(100)]:

If MODULE TYPE is "ai":

TUNE SUM OF ERRORS ALGORITHM THRESHOLDS [yes, no: +(no)]:

If TUNE SUM OF ERRORS ALGORITHM THRESHOLDS is "yes":

LEVEL 2 THRESHOLD [1-4194303: +(3000)]:

LEVEL 3 THRESHOLD [1-4194303: +(600)]:

If MODULE TYPE is "ai":

TUNE BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS [yes, no: +(no)]:

If TUNE BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS is "yes":

NUMBER OF RECEIVED PDUs [1-86400000: +(96000)]:

MINIMUM NUMBER OF ERRORED PDUs [1-864000: +(3000)]:

RATIO THRESHOLD VALUE [1-100: +(4)]:

If MODULE TYPE is "trunk" and TRUNK TYPE is "t3i":

TUNE SUM OF ERRORS ALGORITHM THRESHOLDS [yes, no: +(no)]:

If TUNE SUM OF ERRORS ALGORITHM THRESHOLDS is "yes":

LEVEL 2 ICIP CELL SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(3000)]:

LEVEL 2 ICIP SAR SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(3000)]:

LEVEL 2 ICIP SAR SUBLAYER-INCORRECT FLDS THRESHOLD [1-4194303: +(3000)]:

LEVEL 3 ICIP CVG SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(600)]:

LEVEL 3 ICIP CVG SUBLAYER-INCORRECT FLDS THRESHOLD [1-4194303: +(600)]:

LEVEL 3 ICIP CLS SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(600)]:

LEVEL 3 ICIP CLS SUBLAYER-ROUTING ERRS THRESHOLD [1-4194303: +(600)]:

enter threshold

Syntax (continued)

If TYPE OF PROFILE is "e3" or "t3":

TUNE <E3/T3> 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]:

If TUNE <E3/T3> 24 HOUR INTERVAL PARAMETERS is "yes":

TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE LAYER PERFORMANCE THRESHOLDS is "yes":

If ai-type is "t3" or if TRUNK TYPE is not "e3" or "e3s":

LINE CODE VIOLATION [1-4194303: +(3865)]:

LINE ERRORED SECONDS [1-86400: +(864)]:

LINE SEVERELY ERRORED SECONDS [1-86400: +(40)]:

If TRUNK TYPE is "t3a":

CODE VIOLATION FOR RECEIVE [1-4194303: +(3820)]:

CODE VIOLATION FOR TRANSMIT [1-4194303: +(3820)]:

If TRUNK TYPE is "e3a":

ERRORED BLOCKS FOR RECEIVE [1-4194303: +(12480)]:

ERRORED BLOCKS FOR TRANSMIT [1-4194303: +(12480)]:

BACKGROUND BLOCK ERRORS FOR RECEIVE [1-4194303: +(4000)]:

BACKGROUND BLOCK ERRORS FOR TRANSMIT [1-4194303: +(4000)]:

If TRUNK TYPE is "t3a":

ERRORED SECONDS FOR RECEIVE [1-86400: +(864)]:

ERRORED SECONDS FOR TRANSMIT [1-86400: +(864)]:

SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(40)]:

SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(40)]:

If ai-type is "t3" or TRUNK TYPE is "t3", "t3i", or "t3s":

P-BIT PARITY CODE VIOLATION [1-4194303: +(3820)]:

ERRORED SECONDS [1-900: +(864)]:

SEVERELY ERRORED SECONDS [1-900: +(40)]:

LINK DOWN SECONDS [1-86400: +(16)]:

If MODULE TYPE is "ai" or "trunk":

SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]:

ALARM INDICATION SIGNAL SECONDS [1-86400: +(8)]:

UNAVAILABLE SECONDS [1-86400: +(10)]:

If ai-type is "e3" or "t3" or if TRUNK TYPE is not "e3a":

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]:

If TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS is "yes":

CODE VIOLATION FOR RECEIVE [1-4194303: +(3584)]:

CODE VIOLATION FOR TRANSMIT [1-4194303: +(3584)]:

ERRORED SECONDS FOR RECEIVE [1-86400: +(864)]:

ERRORED SECONDS FOR TRANSMIT [1-86400: +(864)]:

SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(40)]:

SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(40)]:

SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]:

UNAVAILABLE SECONDS [1-86400: +(10)]:

Command loops to THRESHOLD PROFILE ID prompt.

Parameters

The following section explains parameters used in the **enter threshold** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

ALARM INDICATION SIGNAL SECONDS

A count of one-second intervals containing one or more incoming alarm indication signals.

BACKGROUND BLOCK ERRORS

An Errored Block not occurring as part of an Severely Errored Seconds (SES).

CELLS DISCARDED DUE TO ATM LAYER HEADER ERRORS

Number of ATM cells discarded due to header bit errors and also for invalid Virtual Path Identifier/Virtual Channel Identifier (VPI/VCI).

CELLS DISCARDED DUE TO HEC VIOLATIONS

Number of cells discarded due to uncorrected Header Error Control errors.

CODE VIOLATION FOR <RECEIVE/TRANSMIT>

The number of code violations (CVs) that can occur before the threshold is reached and an error is declared. For the layer performance threshold levels, a CV is the reception of a Cyclic Redundancy Check-6 error. For the PLCP path layer performance threshold levels, a CV is the reception of a Bit Interleaved Parity-8 (BIP-8) error. Both errors arise when the code returned from the performed checks is not identical to the corresponding locally calculated code.

If **TYPE OF PROFILE** is *e1* or *t1* and if **TUNE LAYER PERFORMANCE THRESHOLDS** and **TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS** is yes, the number of CVs must be specified for both the **RECEIVE** and **TRANSMIT** directions.

If **TYPE OF PROFILE** is *e3* or *t3* and if **TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS** is yes, the number of CVs must be specified for both the **RECEIVE** and **TRANSMIT** directions.

ERRORED BLOCK

This is the same as **CODE VIOLATIONS**, or Bit Interleaved Parity-8 (BIP-8) error, for E3 frame for TRK-E3A.

ERRORED SECONDS <FOR <RECEIVE/TRANSMIT>>

The number of seconds containing at least one code violation (CV) or errored block that must elapse before the threshold is reached and an error is declared.

If **TYPE OF PROFILE** is *e1* or *t1*, and if **TUNE LAYER PERFORMANCE THRESHOLDS** or **TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS** is yes, the number of seconds must be specified in both the **RECEIVE** and **TRANSMIT** directions.

If **TYPE OF PROFILE** is *e3* or *t3* and if **TUNE LAYER PERFORMANCE THRESHOLDS** is yes, the number of seconds defaults to the receive direction. If **TYPE OF PROFILE** is *t3* and if **TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS** is yes, the number of seconds must be specified in the **RECEIVE** and **TRANSMIT** directions.

For **P-BIT PARITY CODE VIOLATION**, the **ERRORED SECONDS** and **SEVERELY ERRORED SECONDS** will use the same value for both the receive and transmit directions.

enter threshold

Parameters *(continued)*

ICIP CELL SUBLAYER-INVALID FLDS (L2CIV)

The invalid fields of ICIP cell sublayers per level 2 of TRK-T3I.

ICIP SAR SUBLAYER-INVALID FLDS (L2SIV)

The invalid fields of ICIP SAR sublayers per level 2 of TRK-T3I.

ICIP CELL SUBLAYER-INCORRECT FLDS (L2SIC)

The incorrect fields of ICIP SAR sublayers per level 2 of TRK-T3I.

ICIP CVG SUBLAYER-INVALID FLDS (L3VIV)

The invalid fields of ICIP CVG sublayers per level 3 of TRK-T3I.

ICIP CVG SUBLAYER-INCORRECT FLDS (L3VIC)

The incorrect fields of ICIP CVG sublayers per level 3 of TRK-T3I.

ICIP CLS SUBLAYER-INVALID FLDS (L3LIV)

The invalid fields of ICIP CLS sublayers per level 3 of TRK-T3I.

ICIP CLS SUBLAYER-ROUTING ERRS (L3LRE)

The routing errors of ICIP CLS sublayers per level 3 of TRK-T3I.

LINE CODE VIOLATION

If **TUNE LAYER PERFORMANCE THRESHOLDS** is *yes*, the number of line code violations (LCVs) that can occur before the threshold is reached and an error is declared. The number of LCVs specified defaults to the receive direction.

LINE ERRORED SECONDS <FOR <RECEIVE/TRANSMIT>>

If **TUNE LAYER PERFORMANCE THRESHOLDS** is *yes*, the number of seconds that are to elapse before one line code violation (LCV) is declared. If **TYPE OF PROFILE** is *t1*, the number of seconds that are to elapse must be specified for both the **RECEIVE** and **TRANSMIT** directions. If **TYPE OF PROFILE** is *t3*, the number of seconds that are to elapse defaults to the receive direction.

LINE SEVERELY ERRORED SECONDS

If **TUNE LAYER PERFORMANCE THRESHOLDS** is *yes*, the number of seconds that must elapse before a given number of line code violations (LCVs), monitored at T1 or T3 rate, must occur before the threshold is reached and an error is declared.

If **TYPE OF PROFILE** is *t1*, the number of seconds specified must contain 16 or more LCVs monitored at the T1 rate. This value corresponds to a bit error rate (BER) greater than or equal to 10^{-5} .

If **TYPE OF PROFILE** is *t3*, the number of seconds specified must contain 45 or more LCVs monitored at the T3 rate. This value corresponds to a BER greater than or equal to 10^{-6} .

If **TYPE OF PROFILE** is *t1* or *t3*, the number of seconds that are to elapse defaults to the receive direction.

Parameters *(continued)***LEVEL 2 THRESHOLD**

If **TUNE SUM OF ERRORS ALGORITHM THRESHOLDS** is *yes*, the number of non-bursty errors that can be totaled for this level. This threshold level is the sum of errors algorithm per Subscriber Network Interface (SNI) per level two.

LEVEL 3 THRESHOLD

If **TUNE SUM OF ERRORS ALGORITHM THRESHOLDS** is *yes*, the number of non-bursty errors that can be totaled for this level. This threshold level is the sum of errors algorithm per Subscriber Network Interface (SNI) per level three.

LINK DOWN SECONDS

Specifies the number of seconds before the link down condition is declared.

MINIMUM NUMBER OF ERRORED PDUs

The minimum number of errored Protocol Data Units (PDUs) that can be received in order to constitute a "bad" interval.

MODULE TYPE

If **TYPE OF PROFILE** is *e3* or *t3*, specifies if the type of module to be used for the threshold profile is an *ai* or a *trunk*.

NUMBER OF RECEIVED PDUs

The number of Protocol Data Units (PDUs) received to constitute an interval.

OUT OF CELL DELINEATION ANOMALIES

Cell delineation is the process that allows identification of cell boundaries. When 7 cells in a row are discarded because of HEC violations an Out of Cell Delineation (OCD) anomaly occurs.

P-BIT PARITY CODE VIOLATION

The number of occurrences of a received P-bit code on the T3 M-frame that is not identical to the corresponding locally calculated code.

RATIO THRESHOLD VALUE

The ratio of the number of "bad" intervals to the number of intervals to which a threshold value will be applied.

SEVERELY ERRORED FRAMING SECONDS <FOR <RECEIVE/TRANSMIT>>

The number of seconds that must elapse before a severely errored framing event occurs, the threshold is exceeded, and an error is declared.

If **TYPE OF PROFILE** is *e1* or *t1* and if **TUNE LAYER PERFORMANCE THRESHOLDS** is *yes*, the number of seconds must be specified in both the **RECEIVE** and **TRANSMIT** directions.

If **TYPE OF PROFILE** is *e1* or *t1* and if **TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS** is *yes* or if **TYPE OF PROFILE** is *e3* or *t3* and if **TUNE LAYER PERFORMANCE THRESHOLDS** or **TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS** is *yes*, the number of seconds defaults to the receive direction.

enter threshold

Parameters *(continued)*

SEVERELY ERRORED SECONDS <FOR <RECEIVE/TRANSMIT>

The number of seconds that must elapse containing a given number of code violations (CVs) before the threshold is reached and an error is declared.

If **TYPE OF PROFILE** is *e1* or *t1* and if **TUNE LAYER PERFORMANCE THRESHOLDS** is *yes*, the number of seconds must contain 15 or more CVs monitored at the T1 rate. This value corresponds to a bit error rate (BER) that is greater than or equal to $[10^{-5}]$. The number of seconds must be specified in both the **RECEIVE** and **TRANSMIT** directions.

If **TYPE OF PROFILE** is *e1* or *t1* and if **TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS** is *yes*, the number of seconds must contain 15 or more CVs monitored at the T1 rate. This value corresponds to a BER that is greater than or equal to $[10^{-5}]$. The number of seconds must be specified in both the **RECEIVE** and **TRANSMIT** directions.

If **TYPE OF PROFILE** is *e3* or *t3* and if **TUNE LAYER PERFORMANCE THRESHOLDS** is *yes*, the number of seconds must contain 44 or more CVs to exceed the threshold and generate an error. This value corresponds to a BER of $[10^{-6}]$. The number of seconds defaults to the receive direction.

If **TYPE OF PROFILE** is *e3* or *t3* and if **TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS** is *yes*, the specified number of seconds must contain 5 or more CVs to exceed the threshold and generate an error. This value corresponds to a BER greater than or equal to $[10^{-7}]$. The number of seconds must be specified in the both **RECEIVE** and **TRANSMIT** directions.

THRESHOLD PROFILE ID

Specifies the identifier of the threshold profile to be a number from 1 to 16.

TRUNK TYPE

Specifies the trunk module types *e3*, *e3a*, *e3s*, *t3*, *t3a*, *t3i* or *t3s*.

TUNE BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS

Specifies whether (*yes* or *no*) the thresholds for the bursty error algorithm are to be tuned. The bursty-error algorithm records and monitors the ratio of errored Protocol Data Units (PDUs) received by the switching system (SS) network element (NE) to the PDUs received in a defined interval. This algorithm is used to detect a high error rate accompanied by low use. One bursty error algorithm is permitted.

Its thresholds and their values appear as parameters in the **NUMBER OF RECEIVED PDUs**, **MINIMUM NUMBER OF ERRORED PDUs**, and **RATIO THRESHOLD VALUE** prompts.

TUNE ATM ADAPTION LAYER THRESHOLDS

Specifies whether (*yes* or *no*) the asynchronous transfer mode (ATM) Adaption Layer threshold should be defined and monitored at E3 rate. It includes CVG, SAR sum of errors thresholds.

Parameters *(continued)***TUNE ATM LAYER PERFORMANCE THRESHOLDS**

Specifies whether (*yes* or *no*) the asynchronous transfer mode (ATM) level performance threshold should be defined and monitored at E3 or T3 rate. It includes the thresholds for errors detected in the ATM cell header processing. (These performance thresholds and their parameter values appear in the subsequent prompts).

TUNE <E1/E3/T1/T3> 15 MINUTE INTERVAL PARAMETERS

Specifies whether (*yes* or *no*) each performance threshold parameter should be monitored once every 15 minutes at the specified rate. Default values always applies.

TUNE <E1/E3/T1/T3> 24 HOUR INTERVAL PARAMETERS

Specifies whether (*yes* or *no*) each performance threshold parameter should be monitored once every 24 hours at the specified rate. Default values always applies.

TUNE LAYER PERFORMANCE THRESHOLDS

Specifies whether (*yes* or *no*) layer performance thresholds should be defined and monitored at the T1 or T3 rate. (These layer performance thresholds and their parameter values appear in subsequent prompts.)

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS

Specifies whether (*yes* or *no*) the Physical Layer Convergence Protocol (PLCP) path layer performance thresholds should be defined and monitored at the T1 or T3 rate. (These layer performance thresholds and their parameter values appear in subsequent prompts.)

TUNE SUM OF ERRORS ALGORITHM THRESHOLDS

Specifies whether (*yes* or *no*) the thresholds for the algorithm, used to record and total number of errors detected, should be tuned. This algorithm records the number of non-bursty errors that occur during a 15-minute interval and maintains an 8-hour history file of these errors. The non-bursty error thresholds are specified for two levels of severity: level 2 (defined in the **LEVEL 2 THRESHOLD** prompt) and level 3 (defined in the **LEVEL 3 THRESHOLD** prompt).

TYPE OF PROFILE

Specifies the type of AI, or trunk profile as an *e1*, *e3*, *t1*, or *t3*.

UNAVAILABLE SECONDS

A transmission failure is declared when service is unavailable for the number of seconds specified.

enter threshold

```
CC0> enter
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 1
TYPE OF PROFILE [e1, e3, t1, t3]: t1
TUNE T1 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(14)]: +
LINE ERRORED SECONDS FOR RECEIVE [1-900: +(12)]: +
LINE ERRORED SECONDS FOR TRANSMIT [1-900: +(12)]: +
LINE SEVERELY ERRORED SECONDS [1-900: +(10)]: +
CODE VIOLATION FOR RECEIVE [1-4194303: +(14)]: +
CODE VIOLATION FOR TRANSMIT [1-4194303: +(14)]: +
ERRORED SECONDS FOR RECEIVE [1-900: +(12)]: +
ERRORED SECONDS FOR TRANSMIT [1-900: +(12)]: +
SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(10)]: +
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(10)]: +
SEVERELY ERRORED FRAMING SECONDS FOR RECEIVE [1-900: +(2)]: 4
SEVERELY ERRORED FRAMING SECONDS FOR TRANSMIT [1-900: +(2)]: 4
ALARM INDICATION SIGNAL SECONDS [1-86400: +(2)]: 4
UNAVAILABLE SECONDS [1-900: +(10)]: 12
TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: +
TUNE SUM OF ERRORS ALGORITHM THRESHOLDS [yes, no: +(no)]: yes
LEVEL 2 THRESHOLD [1-4194303: +(100)]: 120
LEVEL 3 THRESHOLD [1-4194303: +(20)]: 40
TUNE BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS [yes, no: +(no)]: yes
NUMBER OF RECEIVED PDUs [1-300000: +(3300)]: 3400
MINIMUM NUMBER OF ERRORED PDUs [1-30000: +(100)]: 200
RATIO THRESHOLD VALUE [1-100: +(4)]: 5
TUNE T1 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]: ++
THRESHOLD PROFILE ID [1-16]: 
CC0>
```

SCREEN 4-190. Prompted Entry: Entering a T1 Threshold Profile

```

CC0> enter
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 2
TYPE OF PROFILE [e1, e3, t1, t3]: t3
MODULE TYPE [ai, trunk]: ai
TUNE T3 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]: +
TUNE T3 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(3865)]: +
LINE ERRORED SECONDS [1-86400: +(864)]: +
LINE SEVERELY ERRORED SECONDS [1-86400: +(40)]: 50
P-BIT PARITY CODE VIOLATION [1-4194303: +(3820)]: +
ERRORED SECONDS [1-86400: +(864)]: +
SEVERELY ERRORED SECONDS [1-86400: +(40)]: +
LINK DOWN SECONDS [1-900: +(4)]: +
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]: +
ALARM INDICATION SIGNAL SECONDS [1-86400: +(2)]: 4
UNAVAILABLE SECONDS [1-86400: +(10)]: +
TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(3584)]: 3600
CODE VIOLATION FOR TRANSMIT [1-4194303: +(3584)]: 3600
ERRORED SECONDS FOR RECEIVE [1-86400: +(864)]: 900
ERRORED SECONDS FOR TRANSMIT [1-86400: +(864)]: 900
SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(40)]: 50
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(40)]: 50
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]: +
UNAVAILABLE SECONDS [1-86400: +(10)]: +
THRESHOLD PROFILE ID [1-16]: 
CC0>

```

SCREEN 4-191. Prompted Entry: Entering an AI-T3 Threshold Profile

enter threshold

```
CC0> enter
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 3
TYPE OF PROFILE [e1, e3, t1, t3]: t3
MODULE TYPE [ai, trunk]: trunk
TRUNK TYPE [t3, t3a, t3i, t3s]: t3i

TUNE T3 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(387)]: +
LINE ERRORED SECONDS [1-900: +(86)]: +
LINE SEVERELY ERRORED SECONDS [1-900: +(4)]: +
P-BIT PARITY CODE VIOLATION [1-4194303: +(382)]: +
ERRORED SECONDS [1-900: +(86)]: 90
SEVERELY ERRORED SECONDS [1-900: +(4)]: 90
LINK DOWN SECONDS [1-900: +(4)]: +
SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]: +
ALARM INDICATION SIGNAL SECONDS [1-86400: +(2)]: 4
UNAVAILABLE SECONDS [1-900: +(10)]: +

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: +
TUNE SUM OF ERRORS ALGORITHM THRESHOLDS [yes, no: +(no)]: yes
LEVEL 2 ICIP CELL SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(3000)]: 1000
LEVEL 2 ICIP SAR SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(3000)]: 1000
LEVEL 2 ICIP SAR SUBLAYER-INCORRECT FLDS THRESHOLD [1-4194303: +(3000)]: 1000
LEVEL 3 ICIP CVG SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(600)]: 500
LEVEL 3 ICIP CVG SUBLAYER-INCORRECT FLDS THRESHOLD [1-4194303: +(600)]: 500
LEVEL 3 ICIP CLS SUBLAYER-INVALID FLDS THRESHOLD [1-4194303: +(600)]: 500
LEVEL 3 ICIP CLS SUBLAYER-ROUTING ERRS THRESHOLD [1-4194303: +(600)]: 500

TUNE T3 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: no
TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(3584)]: +
CODE VIOLATION FOR TRANSMIT [1-4194303: +(3584)]: +
ERRORED SECONDS FOR RECEIVE [1-86400: +(864)]: 1000
ERRORED SECONDS FOR TRANSMIT [1-86400: +(864)]: 1000
SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(40)]: +
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(40)]: +
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]: +
UNAVAILABLE SECONDS [1-86400: +(10)]: +

THRESHOLD PROFILE ID [1-16]: 
CC0>
```

SCREEN 4-192. Prompted Entry: Entering a TRK-T3I Threshold Profile

```

CC0> enter
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16]: 3
TYPE OF PROFILE [e1, e3, t1, t3]: t3
MODULE TYPE [ai, trunk]: trunk
TRUNK TYPE [t3, t3a, t3i, t3s]: t3a

TUNE T3 15 MINUTE INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
LINE CODE VIOLATION [1-4194303: +(387)]: +
LINE ERRORED SECONDS [1-900: +(86)]: +
LINE SEVERELY ERRORED SECONDS [1-900: +(4)]: +
CODE VIOLATION FOR RECEIVE [1-4194303: +(382)]: +
CODE VIOLATION FOR TRANSMIT [1-4194303: +(382)]: +
ERRORED SECONDS FOR RECEIVE [1-900: +(86)]: 90
ERRORED SECONDS FOR TRANSMIT [1-900: +(86)]: 90
SEVERELY ERRORED SECONDS FOR RECEIVE [1-900: +(4)]: 90
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-900: +(4)]: 90
SEVERELY ERRORED FRAMING SECONDS [1-900: +(2)]: +
ALARM INDICATION SIGNAL SECONDS [1-86400: +(2)]: 4
UNAVAILABLE SECONDS [1-900: +(10)]: +

TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: +
TUNE ATM LEVEL PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CELLS DISCARDED DUE TO HEC VIOLATIONS [1-4194303: +(100)]:+
CELLS DISCARDED DUE TO ATM LAYER HEADER ERRORS [1-900: +(2)]:+

TUNE T3 24 HOUR INTERVAL PARAMETERS [yes, no: +(no)]: yes
TUNE LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: no
TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS [yes, no: +(no)]: yes
CODE VIOLATION FOR RECEIVE [1-4194303: +(3584)]: +
CODE VIOLATION FOR TRANSMIT [1-4194303: +(3584)]: +
ERRORED SECONDS FOR RECEIVE [1-86400: +(864)]: 1000
ERRORED SECONDS FOR TRANSMIT [1-86400: +(864)]: 1000
SEVERELY ERRORED SECONDS FOR RECEIVE [1-86400: +(40)]: +
SEVERELY ERRORED SECONDS FOR TRANSMIT [1-86400: +(40)]: +
SEVERELY ERRORED FRAMING SECONDS [1-86400: +(8)]: +
UNAVAILABLE SECONDS [1-86400: +(10)]: +

THRESHOLD PROFILE ID [1-16]: 
CC0>

```

SCREEN 4-193. Prompted Entry: Entering a TRK-T3A Threshold Profile

verify threshold (BNS-2000 only)

The output of the **verify threshold** command enables you to check information entered in the database for a customized threshold profile, the default threshold profiles, or all threshold profiles. In addition, the output of **verify threshold** includes the module/port addresses that reference the specified profile. If a module/port does not reference the specified profile, the system displays the message:

NO MODULE/PORT IS REFERENCING THIS THRESHOLD PROFILE.

Syntax

You can input **verify threshold** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16, default, all: +(all)]:
If THRESHOLD PROFILE ID is "default":
TYPE OF PROFILE [e1, e3, t1, t3, all: +(all)]:
```

Parameters

Except for being able to specify the word *default*, meaning the system-supplied profiles, the **THRESHOLD PROFILE ID** parameter definition for **verify threshold** is the same as that for **enter threshold**.

And except for being able to specify the word *all*, meaning every threshold profile, the **THRESHOLD PROFILE ID** and **TYPE OF PROFILE** parameter definitions for **verify threshold** are the same as that for **enter threshold**.

```
CC0> verify
OBJECTS [...threshold...]: threshold
THRESHOLD PROFILE ID [1-16, default, all: +(all)]: +
<report output>
```

SCREEN 4-194. Prompted Entry: Verifying All Threshold Profiles

```

CC0> verify threshold 1
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify threshold 1
  THRESHOLD PROFILE ID: 1
  TYPE OF PROFILE: t1 (ai)

                                     15 MINUTE      24 HOUR

  T1 LAYER PERFORMANCE THRESHOLDS:

  LINE CODE VIOLATION:                14            134
  LINE ERR'D SECS RCV:                 12            121
  LINE ERR'D SECS XMIT:                12            121
  LINE SEV ERR'D SECS:                 10            100
  CODE VIOLATION RCV:                 14            134
  CODE VIOLATION XMIT:                 14            134
  ERR'D SECS RCV:                     12            121
  ERR'D SECS XMIT:                     12            121
  SEV ERR'D SECS RCV:                  10            100
  SEV ERR'D SECS XMIT:                  10            100
  SEV ERR'D FRAMING SECS RCV:           6            117
  SEV ERR'D FRAMING SECS XMIT:          6             17
  ALARM INDICATION SIGNAL SECS:         6             10
  UNAVAIL SECS:                        16             10

  T1 PLCP PATH LAYER PERFORMANCE THRESHOLDS:

  CODE VIOLATION RCV:                  17            125
  CODE VIOLATION XMIT:                  17            125
  ERR'D SECS RCV:                      14            121
  ERR'D SECS XMIT:                      14            121
  SEV ERR'D SECS RCV:                   12            100
  SEV ERR'D SECS XMIT:                   12            100
  SEV ERR'D FRAMING SECS:                4             17
  UNAVAIL SECS:                         10             10

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify threshold 1
  SUM OF ERRORS ALGORITHM THRESHOLDS:

  LEVEL 2 THRESHOLD:                    140
  LEVEL 3 THRESHOLD:                     60

  BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS:

  NUM OF RCV PDUs:                      3600
  MIN NUM OF ERR'D PDUs:                 400
  RATIO THRESHOLD VALUE:                  6

  REFERENCED BY:

  MOD      PORT      MOD TYPE
  40        1      ait1
CC0>

```

SCREEN 4-195. One-line Entry/Output: Verifying an AI-T1 Threshold Profile

```

CC0> verify threshold 2
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify threshold 2
  THRESHOLD PROFILE ID: 2
  TYPE OF PROFILE: t3 (ai)

                                     15 MINUTE      24 HOUR

  T3 LAYER PERFORMANCE THRESHOLDS:

  LINE CODE VIOLATION:                387          3865
  LINE ERR'D SECS:                     86           864
  LINE SEV ERR'D SECS:                  4            60
  P-BIT PARITY CODE VIOLATION:         382          3820
  ERR'D SECS:                          86           864
  SEV ERR'D SECS:                      4            40
  SEV ERR'D FRAMING SECS:               2             8
  ALARM INDICATION SIGNAL SECS:         6            10
  UNAVAIL SECS:                        10            10

  T3 PLCP PATH LAYER PERFORMANCE THRESHOLDS:

  CODE VIOLATION RCV:                  359          3700
  CODE VIOLATION XMIT:                  359          3700
  ERR'D SECS RCV:                       86          1000
  ERR'D SECS XMIT:                      86          1000
  SEV ERR'D SECS RCV:                   4            60
  SEV ERR'D SECS XMIT:                  4            60
  SEV ERR'D FRAMING SECS:               2             8
  UNAVAIL SECS:                        10            10

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify threshold 2

  SUM OF ERRORS ALGORITHM THRESHOLDS:

  LEVEL 2 THRESHOLD:                    3000
  LEVEL 3 THRESHOLD:                     600

  BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS:

  NUM OF RCV PDUs:                      96000
  MIN NUM OF ERR'D PDUs:                 3000
  RATIO THRESHOLD VALUE:                  4

  REFERENCED BY:

  MOD      PORT      MOD TYPE
  23        1      ait3
CC0>

```

SCREEN 4-196. One-line Entry/Output: Verifying an AI-T3 Threshold Profile

```

CC0> verify threshold 3
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify threshold 3

THRESHOLD PROFILE ID: 3
TYPE OF PROFILE: t3 (trunk)

T3 LAYER PERFORMANCE THRESHOLDS:
15 MINUTE      24 HOUR

LINE CODE VIOLATION:      387      3865
LINE ERR'D SECS:          86      864
LINE SEV ERR'D SECS:      4      40
P-BIT PARITY CODE VIOLATION: 382      3820
ERR'D SECS:              150      864
SEV ERR'D SECS:          150      40
SEV ERR'D FRAMING SECS:    2      8
ALARM INDICATION SIGNAL SECS: 6      10
UNAVAIL SECS:            10      10

T3 PLCP PATH LAYER PERFORMANCE THRESHOLDS:

CODE VIOLATION RCV:      359      3584
CODE VIOLATION XMIT:     359      3584
ERR'D SECS RCV:          86      1500
ERR'D SECS XMIT:         86      1500
SEV ERR'D SECS RCV:      4      40
SEV ERR'D SECS XMIT:     4      40
SEV ERR'D FRAMING SECS:  2      8
UNAVAIL SECS:            10      10

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify threshold 3

REFERENCED BY:

MOD      PORT      MOD TYPE
22      N/A      trunk-t3

```

```

CC0>

```

SCREEN 4-197. One-line Entry/Output: Verifying a TRK-T3 Threshold Profile

```

CC0> verify threshold 3
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify threshold 3

THRESHOLD PROFILE ID: 3
TYPE OF PROFILE: t3 (t3a trunk)

T3 LAYER PERFORMANCE THRESHOLDS:

15 MINUTE      24 HOUR

LINE CODE VIOLATION:      387      3865
LINE ERR'D SECS:          86      864
LINE SEV ERR'D SECS:      4      40
CODE VIOLATIONS FOR RCV:  382      3820
CODE VIOLATIONS FOR XMIT: 382      3820
ERR'D SECS FOR RCV:       86      864
ERR'D SECS FOR XMIT:      86      864
SEV ERR'D SECS FOR RCV:   4      40
SEV ERR'D SECS FOR XMIT:  4      40
SEV ERR'D FRAMING SECS:   2      8
ALARM INDICATION SIGNAL SECS: 4      10
UNAVAIL SECS:             10      10

T3 PLCP PATH LAYER PERFORMANCE THRESHOLDS:

CODE VIOLATION RCV:      359      3584
CODE VIOLATION XMIT:     359      3584
ERR'D SECS RCV:          86      1000
ERR'D SECS XMIT:         86      1000
SEV ERR'D SECS RCV:      4      40
SEV ERR'D SECS XMIT:     4      40
SEV ERR'D FRAMING SECS:  2      8
UNAVAIL SECS:            10      10

ATM LEVEL PERFORMANCE THRESHOLDS:

CELLS DISC'D DUE TO HEC VIOLAT'S      600
CELLS DISC'D DUE TO ATM LAYER HDR ERRS  40

      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify threshold 3

REFERENCED BY:

MOD      PORT      MOD TYPE
10      N/A      trunk-t3a

CC0>

```

SCREEN 4-198. One-line Entry/Output: Verifying a TRK-T3A Threshold Profile

Report Fields

This table correlates each report field heading shown in the output of **verify threshold** to the parameter prompts in **enter threshold** or **change threshold**. The information beneath each report field heading reflects the parameter option specified in either command. An *N/A* indicates that the parameter is *not applicable* or *not used*.

Report Field Name	Corresponding Parameter Name
ALARM INDICATION SIGNAL SECONDS	ALARM INDICATION SIGNAL SECONDS
ATM ADAPTION LAYER THRESHOLDS	ATM ADAPTION LAYER THRESHOLDS
ATM LEVEL PERFORMANCE THRESHOLDS	TUNE ATM LEVEL PERFORMANCE THRESHOLDS
BACKGROUND BLOCK ERRORS	BACKGROUND BLOCK ERRORS
BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS	TUNE BURSTY ERROR ALGORITHM LEVEL 3 THRESHOLDS
CELLS DISC'D DUE TO ATM LAYER HDR ERRS	CELLS DISCARDED DUE TO ATM LAYER HEADER ERRORS
CELLS DISC'D DUE TO HEC VIOLAT'S	CELLS DISCARDED DUE TO HEC VIOLATIONS
CODE VIOLATION <RCV/XMIT>	CODE VIOLATION FOR <RECEIVE/TRANSMIT>
CVG SUBLAYER INCORRECT FIELDS	CVG SUBLAYER INCORRECT FIELDS
CVG SUBLAYER INVALID FIELDS	CVG SUBLAYER INVALID FIELDS
ERRORED BLOCKS	ERRORED BLOCKS
ERR'D SECS FOR <RCV/XMIT>	ERRORED SECONDS <FOR <RECEIVE/TRANSMIT>>
ICIP CELL SUBLAYER-INVALID FLDS	ICIP CELL SUBLAYER-INVALID FLDS
ICIP CVG SUBLAYER-INVALID FLDS	ICIP CVG SUBLAYER-INVALID FLDS
ICIP CVG SUBLAYER-INCORRECT FLDS	ICIP CVG SUBLAYER-INCORRECT FLDS
ICIP CLS SUBLAYER-INVALID FLDS	ICIP CLS SUBLAYER-INVALID FLDS
ICIP CLS SUBLAYER-ROUTING ERRS	ICIP CLS SUBLAYER-ROUTING ERRS
ICIP SAR SUBLAYER-INVALID FLDS	ICIP SAR SUBLAYER-INVALID FLDS
ICIP SAR SUBLAYER-INCORRECT FLDS	ICIP SAR SUBLAYER-INCORRECT FLDS
LEVEL 2 THRESHOLD	LEVEL 2 THRESHOLD
LEVEL 3 THRESHOLD	LEVEL 3 THRESHOLD
LINE CODE VIOLATION	LINE CODE VIOLATION
LINE ERR'D SECS <RCV/XMIT>	LINE ERRORED SECONDS <FOR <RECEIVE/TRANSMIT>>
LINE SEV ERR'D SECS	LINE SEVERELY ERRORED SECONDS
LINK DOWN SECONDS	LINK DOWN SECONDS

verify threshold

Report Fields *(continued)*

Report Field Name	Corresponding Parameter Name
MIN NUM OF ERR'D PDUs	MINIMUM NUMBER OF ERRORED PDUs
MOD	None: module address referencing threshold profile
MOD TYPE	None: module type referencing threshold profile
NUM OF RCV PDUs	NUMBER OF RECEIVED PDUs
P-BIT PARITY CODE VIOLATION	P-BIT PARITY CODE VIOLATION
PORT	None: port number referencing threshold profile
RATIO THRESHOLD VALUE	RATIO THRESHOLD VALUE
OUT OF CELL DELINEATION ANOMALIES	OUT OF CELL DELINEATION ANOMALIES
SAR SUBLAYER INCORRECT FIELDS	SAR SUBLAYER INCORRECT FIELDS
SAR SUBLAYER INVALID FIELDS	SAR SUBLAYER INVALID FIELDS
SEV ERR'D FRAMING SECS <RCV/XMIT>	SEVERELY ERRORED FRAMING SECONDS <FOR <RECEIVE/TRANSMIT>>
SEV ERR'D SECS FOR <RCV/XMIT>	SEVERELY ERRORED SECONDS <FOR <RECEIVE/TRANSMIT>>
SIP CLS LEVEL PERFORMANCE	SIP CLS LEVEL PERFORMANCE
SRI TIMEOUTS	SRI TIMEOUTS
SUM OF ERRORS ALGORITHM THRESHOLDS THRESHOLD PROFILE ID	TUNE SUM OF ERRORS ALGORITHM THRESHOLDS THRESHOLD PROFILE ID
TYPE OF PROFILE <E1/E3/T1/T3> LAYER PERFORMANCE THRESHOLDS	TYPE OF PROFILE TUNE LAYER PERFORMANCE THRESHOLDS
<E1/E3/T1/T3> PLCP PATH LAYER PERFORMANCE THRESHOLDS	TUNE PLCP PATH LAYER PERFORMANCE THRESHOLDS
UNAVAIL SECS	UNAVAILABLE SECONDS
15 MINUTE	TUNE <T1/T3> 15 MINUTE INTERVAL PARAMETERS
24 HOUR	TUNE <T1/T3> 24 HOUR INTERVAL PARAMETERS

System Responses

This section contains system responses for the **threshold** commands. It is organized by the key phrase that prefaces the response.

COMMAND FAILED:

No more profiles may be entered; maximum has been reached.

Only 16 threshold profiles can be administered in the database.

INFO:

No more profiles may be entered; maximum has been reached.

Only 16 threshold profiles can be administered in the database.

INPUT ERROR:

A threshold profile being referenced cannot be deleted.

The specified threshold profile ID is being referenced by an AI-E1, AI-E3, AI-T1, AI-T3, AI-T3P, TRK-E3, TRK-T3, TRK-T3S, or TRK-T3I module. This profile ID cannot be deleted unless the AI port or trunk module changes its profile ID to a different profile ID or any information regarding the AI port or trunk module is deleted from the database.

Not an allowed value.

The value input is not allowed.

Threshold profile <ID> is already entered.

The specified threshold profile ID has already been configured in the database.

Threshold profile <ID> is not entered.

The specified threshold profile ID has not been configured in the database.

Too many parameters.

Re-input the command line with fewer parameters.

WARNING:

Threshold profile was not changed on module <addr>. Remove and restore module.

The specified module must be removed from service because the profile ID reference that the module references must be changed. Return the module to service after the change is made.

NO KEY PHRASE :

DATABASE BEING MODIFIED - TRY AGAIN LATER

The command process cannot continue because the database is being changed. Wait a while and retry the command.

SERIOUS DATABASE TRANSACTION PROBLEM - UPDATE NOT ACCEPTED

The command process cannot continue because of a critical problem in the database. (Possibly, a file could have been removed from the disk.) Contact your local support group.

time command set

The **time** command set is used to set and to display the date and time on the node console, which is used for date and time stamping activities such as displaying reports, scheduling reports, and backing up the database. The node time is set with the **set time** command; however, if the node is monitored by *StarKeeper II* NMS, the node time is set by *StarKeeper II* NMS. Both controllers of a dual Control Computer node are synchronized. The MRCM time is set and controlled independently of the node time.

The following commands are related to the **time** command set.

Commands	Related Verbs	
display time	diagnose	dstat
set time	display	schedule
	dmeas	verify

display time

The **display time** command enables you to display the date and time currently known to the system. The date and time displayed were previously selected or reset with **set time**. An accurate time setting is important because the time appears on system fault messages and reports.

NOTE: The node name appears on the date stamp only after the Control Computer has been rebooted.

Syntax

You can input **display time** in prompted or one-line entry.

```
CC0> display
OBJECTS [...time...]: time
```

Parameters

None.

```
CC0> display
OBJECTS [...time...]: time
<system output>
```

SCREEN 4-199. Prompted Entry: Displaying the Current Time and Date

```
CC0> display time
  95-12-31 12:00:00 NODE=Redqueen
M display time
CC0>
```

SCREEN 4-200. One-line Entry/Output: Displaying the Current Time and Date

set time

The **set time** command enables you to correct the current time and date in the system. The time must be entered in the 24-hour clock format and the date must be entered in the year, month, day format.

Syntax

You can input **set time** in prompted or one-line entry.

```
CC0> set
OBJECTS [...time...]: time
TIME [HHMMSS] +(current time):
DATE [YYMMDD] +(current date):
```

The current time and date are defaults for each command prompt.

Parameters

This section contains explanations of parameters used in the **set time** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

DATE

Specifies the date in the format *YYMMDD*, two digits for the year, two for the month, and two for the day.

TIME

Specifies the time of day in the format *HHMMSS*, two digits for the hour, two for minutes, and two for seconds.

```
CC0> set
OBJECTS [...time...]: time
TIME [HHMMSS] +(143022): +
DATE [YYMMDD] +(951231): +
CC0>
```

SCREEN 4-201. Prompted Entry: Setting the Time

```
CC0> set time 143022 951231
```

SCREEN 4-202. One-line Entry: Setting the Time

System Responses

This section contains system responses for **set time**. It is organized by the key phrase that prefaces the response.

Other than the command output, **display time** does not have any associated system responses.

INPUT ERROR:

Day Invalid: <num>

The number you entered is incorrect. The system was expecting a number from *01* to *31*, depending on the month. For the months whose numerical equivalent is *04*, *06*, *09*, or *11* the day expected ranges from *01* to *30*. For the months whose numerical equivalent is *01*, *03*, *05*, *07*, *08*, *10*, or *12* the day expected ranges from *01* to *31*. For the month whose numerical equivalent is *02*, the day expected ranges from *01* to *28* for non-leap years or from *02* to *29* for leap years.

Hour Invalid: <num>

The number you entered is incorrect. The system was expecting a number from *00* to *23*.

Input String too Long: <string>

The string you entered contained more than *80* characters.

Minute Invalid: <num>

The number you entered is incorrect. The system was expecting a number from *00* to *59*.

Month Invalid: <num>

The number you entered is incorrect. The system was expecting a number from *01* to *12*.

Not an Allowed Value: <value>

The value you entered is a negative or a nonvalid number or a nonvalid character.

Seconds Invalid: <num>

The number you entered is incorrect. The system was expecting a number from *00* to *59*.

Year Invalid: <num>

The number you entered is incorrect. The system was expecting a number from *70* to *99*.

trace command set (BNS-2000 only)

The following commands are related to the **trace** command set.

Administration	Related Objects
set trace verify trace	address ai gar trunk

set trace (BNS-2000 only)

The **set trace** command enables you to check the path traversed by connectionless data through the network.

A trace is set for a specified source address and destination address pair. A source address consists of the information specified in the **SOURCE ADDRESS NUMBER**. A destination address consists of the information specified in both the **TARGET ADDRESS TYPE** and **TARGET ADDRESS NUMBER**. The source and destination modules then generate a set of **REPORT STATUS** alarms that trace the data path through the network.

Only one trace can be established at one time per node. If an additional trace is required, the first trace must be in the *off* state. A trace cannot be set if the source module or port is not in service or if the facility is unavailable.

The source address must be an individual address. The destination address can be either an individual address or a group address. The reports are generated on every node in the path of the LATA or IC.

Syntax

You can input **set trace** in prompted or one-line entry.

```
CC0> set
OBJECTS [...trace...]: trace
CONTROL [on, off: +(on)]:
TRACE TYPE [ai, trk-t3i, gar: +(ai)]:
```

If TRACE TYPE is "trk-t3i" or "gar":

```
MODULE ADDRESS
```

If CONTROL is "on":

```
SOURCE ADDRESS NUMBER [up to 10 digits +(none)]:
TARGET ADDRESS TYPE [individual, group: +(individual)]:
TARGET ADDRESS NUMBER [up to 10 digits +(previously entered number)]:
```

Parameters

This section explains parameters used in the **set trace** prompting sequence. Refer to the Syntax section for the prompting sequence, system defaults, and parameter options.

OBJECTS

Specifies the type of object for which a set is desired.

CONTROL

Specifies if the trace is to be turned *on* or *off*. The default is *off*, initially.

Once the trace is turned *on*, the default becomes *off*. If the module is faulty, or out of service, the system will turn the trace off.

MODULE ADDRESS

The address of the TRK-T3I or GAR module.

Parameters *(continued)***SOURCE ADDRESS NUMBER**

A 10-digit number that specifies the source address of an module. This number must map to an existing module serving as the source destination if the trace is set on AI. It could be an address outside the local network in the case of ICI trace. The address which was entered most recently will be shown as default. If nothing was entered previously, "none" will be shown as default.

TARGET ADDRESS NUMBER

A 10-digit number that specifies the address of the destination module. The address which was entered most recently will be shown as default. If nothing was entered previously, "none" will be shown as default.

The North American Numbering Plan (NANP), consisting of a number beginning with 1 (the U.S.A. country code) followed by 10 digits, is supported.

TARGET ADDRESS TYPE

Specifies if the type of destination address set for the trace is an *individual (i)* module or a *group (g)* of modules.

TRACE TYPE

The type of module where the trace is set.

```
CC0> set
OBJECTS [...trace...]: trace
CONTROL [on, off: +(on)]: on
TRACE TYPE [ai, trk-t3i, gar: +(ai)]: +
SOURCE ADDRESS NUMBER [up to 10 digits: +(none)]: 9084155002
TARGET ADDRESS TYPE [individual, group: +(individual)]: group
TARGET ADDRESS NUMBER [up to 10 digits: +(none)]: 2015763344
CC0>
```

SCREEN 4-203. Prompted Entry: Setting Trace On for AI for the First Time

set trace

```
CC0> set
OBJECTS [...trace...]: trace
CONTROL [on, off: +(on)]: on
TRACE TYPE [ai, trk-t3i, gar: +(ai)]: +
SOURCE ADDRESS NUMBER [up to 10 digits: +(9084155002)]: +
TARGET ADDRESS TYPE [individual, group: +(individual)]: group
TARGET ADDRESS NUMBER [up to 10 digits: +(2015763344)]: +
CC0>
```

SCREEN 4-204. Prompted Entry: Setting Trace On for AI with Default Addresses

```
CC0> set
OBJECTS [...trace...]: trace
CONTROL [on, off: +(off)]: +
CC0>
```

SCREEN 4-205. Prompted Entry: Setting Trace Off

```
CC0> set trace on ai 9085416796 + 2015763344
```

SCREEN 4-206. One-line Entry: Setting Trace On

```
CC0> set
OBJECTS [...trace...]: trace
CONTROL [on, off: +(on)]: on
TRACE TYPE [ai, trk-t3i, gar: +(ai)]: trk-t3i
MODULE ADDRESS: 7
SOURCE ADDRESS NUMBER [up to 10 digits: +(none)]: 9085416796
TARGET ADDRESS TYPE [individual, group: +(individual)]: group
TARGET ADDRESS NUMBER [up to 10 digits: +(none)]: 2015763344
INFO: Trace is on for source address 9085416796 and
      destination address 2015763344: 7.1.
CC0>
```

SCREEN 4-207. Prompted Entry: Setting Trace On for TRK-T3I for the First Time

*<Assume that trace was turned on for TRK-T3I and then turned off.
Now issue **set trace** again.*

```
CC0> set
OBJECTS [...trace...]: trace
CONTROL [on, off: +(on)]: on
TRACE TYPE [ai, trk-t3i, gar: +(ai)]: trk-t3i
MODULE ADDRESS: 7
SOURCE ADDRESS NUMBER [up to 10 digits: +(9085416796)]: +
TARGET ADDRESS TYPE [individual, group: +(individual)]: group
TARGET ADDRESS NUMBER [up to 10 digits: +(2015763344)]: +

INFO: Trace is on for source address 9085416796 and
      destination address 2015763344: 7.1.

CC0>
```

SCREEN 4-208. Prompted Entry: Setting Trace On for TRK-T3I with Default Addresses

```
CC0> set trace off
```

SCREEN 4-209. One-line Entry: Setting Trace Off

verify trace

The **verify trace** command enables you to examine the state of the trace and the parameter values that currently exist for the **set trace** command in the configuration database.

Syntax

You can input **verify trace** in prompted or one-line entry.

```
CC0> verify
OBJECTS [...trace...]: trace
```

Parameters

None.

```
CC0> verify
OBJECTS [...trace...]: trace
<report output>
```

SCREEN 4-210. Prompted Entry: Verifying the Trace

```
CC0> verify trace
<yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify trace
INFO for non-ICI TRACE
```

STATE	TIME OF SET ON OR OFF	MOD ADDR	PORT	SOURCE ADDRESS	TARGET ADDRESS
on	95-12-31 12:01	44	1	C5416796222	E5763344333

```
CC0>
```

SCREEN 4-211. One-line Entry/Output: Verifying the Trace Set

```
CC0> verify trace
    <yy-mm-dd> <hh:mm:ss> NODE=<name>
M verify trace
INFO for non-ICI TRACE
STATE          TIME OF SET      MOD  PORT  SOURCE      TARGET
              ON OR OFF      ADDR ADDRESS    ADDRESS
off (match)    95-12-31 12:50    44   1    C5416796222 E5763344333
CC0>
```

SCREEN 4-212. One-line Entry/Output: Verifying the Trace Set to Off

Report Fields

This table correlates each report field heading shown in the output of **verify trace** to the parameter for which you are prompted in **set trace**. The information beneath each report field heading reflects the parameter option specified in either command. *None* or *N/A* means the parameter is not used or not applicable.

Report Field Name	Corresponding Parameter Name or Definition
TARGET ADDRESS	TARGET ADDRESS NUMBER TARGET ADDRESS TYPE <i>C indicates individual; E indicates group.</i>
MOD ADDR	<i>None</i> : the node slot of the module used as the source address (for AI modules, the SNI reference).
PORT	None: the port number of the module used as the source address (for AI modules, the SNI reference).
SOURCE ADDRESS	SOURCE ADDRESS NUMBER SOURCE ADDRESS TYPE <i>C indicates individual; E indicates group.</i>
STATE	CONTROL <i>Carrier</i> indicates a carrier failure on the source module port (SA). <i>Error</i> indicates an error was detected in the data entering at the destination module port. <i>Initial</i> indicates the trace was turned off by a node boot. <i>Manual</i> indicates the user turned the trace off. <i>Match</i> indicates the trace was turned off by a successful match. <i>Oos</i> indicates the source module port (SA) is out of service.
TIME OF SET ON OR OFF	<i>N/A</i> : the time in which the trace was set <i>on</i> or <i>off</i> .

System Responses

This section contains system responses for the **trace** command. It is organized by the key phrase that prefaces each response.

COMMAND FAILED:

Cannot obtain module type from DB

The module address specified is for an empty slot.

Module did not respond.

The command does not acknowledge the Control Computer's instruction to set the trace on.

Module <module> must be a TRKT3I or GAR.

The module specified must be a TRK-T3I or GAR when specifying the module address.

Module must be in service.

To run the **set trace on** command, the module and port must be in service.

Module type mismatch between TRACE TYPE and MODULE ADDRESS

The **TRACE TYPE** entered does not correspond to the module for the specified node slot address.

Port must be in service.

To run the **set trace on** command, the module and port must be in service.

Shelf <num> is not in service, status is not available.

The module or module port status cannot be obtained because the specified shelf is not in service.

Too many parameters.

Re-enter the command with the correct parameter options.

INFO:

Trace is already on for source address <address> and destination address <address>: <module>

The **set trace** command does not have to be set to **on** because a trace has already been turned on for this source/destination pair.

Trace already off.

The **set trace off** command is not needed because the trace has already been set to *off*.

INPUT ERROR:

Invalid Number: <num>

You entered a number that is incorrect or not allowed (for example: -1).

List not allowed: <num>

Only a single number, single address, or a range of numbers, can be entered.

Module address <addr> is empty. <module> is expected.

A module is not physically installed in the specified module address.

INPUT ERROR: *(continued)*

Module Does Not Exist: <addr>

Information is not entered in the database for the specified module address.

Module address <mod> is not a valid hardware type for this command

The module address entered is for a Control Computer module.

traffic command set (BNS-2000 only)

The **traffic** command set can be used on BNS-2000 network nodes only. The following commands are related to the **traffic** command set.

Verb/Object	Related Objects	
display traffic	ai	measurements
	bsc3270	msm
	concentrator	sam
	connections	samml
	cpm	sldc8
	cpmml	slm
	dkap	trunk
	e2a	tsm8
	frm	tsmt1
	frm-m2	ty
	group	x25
	host	x25p
	lpm	x75

display traffic (BNS-2000 only)

The **display traffic** command outputs predefined destination (PDD) and permanent virtual circuit (PVC) information for modules, groups, or hosts. Besides providing module address, channel/port number, and the state of the call, the command output furnishes segment counts for the selected module, group, or host. When specifying command output for modules, a channel number can be specified along with a module address.

For all associated group names of the connections established, input **display connections**.

Syntax

You can input **display traffic** in prompted or one-line entry.

```
CC0> display
OBJECTS [...traffic...]: traffic
TYPE [module, group, host: +(group)]:

If TYPE is "module":
    MODULE ADDRESS [module number, all: +(all)]:
If TYPE is "module" and one MODULE ADDRESS is entered:
    CHANNEL NUMBER [channel number, all: [(all)]:

If TYPE is "group":
    GROUP NAME [group name, all: +(all)]:

If TYPE is "host":
    HOST NAME [host name, all: +(all)]:
```

Parameters

This section contains explanations of parameters used in the **display traffic** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

GROUP NAME

A string of 1 to 8 characters specifying the name of the group for which data is to be displayed; or the word *all*, meaning every connection for every group.

HOST NAME

A string of 1 to 8 alphanumeric characters specifying the name of the host for which data is to be displayed; or the word *all*, meaning every connection for every host. Since host names are associated with the groups to which they belong (they are entered via **enter group**), PVC information for all modules associated with the host is displayed.

MODULE ADDRESS

The set of numbers identifying the address of the module; or the word *all*, meaning every module address. If the module is installed directly in the node, the address is *<module>*. Where: *module* is the node slot number that the module occupies.

If the module is installed in a concentrator, the address is *<concentrator/module>*. Where: *concentrator* is the node slot number that the LIM, which connects the concentrator to the module, occupies; and *module* is the concentrator slot number of the module. For two-board downloadable modules, specify the address of the primary board.

Parameters *(continued)***CHANNEL NUMBER**

The number of the overhead or backplane channel for which the traffic display is requested.

TYPE

Specifies whether PDD and PVC information is to be displayed for a *module*, *group*, or *host*.

```
CC0> display
OBJECTS [...traffic...]: traffic
TYPE [module, group, host, +(group)]: module
MODULE ADDRESS [module number, all: +(all)]: 12
CHANNEL NUMBER [channel number, all: +(all)]:
<report output>
```

SCREEN 4-213. Prompted Entry: Displaying Module Traffic

```
CC0> display
OBJECTS [...traffic...]: traffic
TYPE [module, group, host, +(group)]: +
GROUP NAME [group name, all: +(all)]: tygrp012
<report output>
```

SCREEN 4-214. Prompted Entry: Displaying Group Traffic

```
CC0> display
OBJECTS [...traffic...]: traffic
TYPE [module, group, host, +(group)]: host
HOST NAME [host name, all: +(all)]: cpmo1
<report output>
```

SCREEN 4-215. Prompted Entry: Displaying Host Traffic

```

CC0> display traffic module 12 all
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M display traffic module 12 all
MODULE: 12
-----
      CH/PT  CU/TM      SEG CNT  STATE  TO MOD  CH/PT  CU/TM      SEG CNT
              BOARD      (+ = PDD,
              CS/LCH      or PVC,
              PT/LCH      # = RRC)
              PT/DLCI
      5              1234567890 TALKING  4      9      1/2  9876543210
      10             1234 TALKING  4      10     1/3      54321
CC0>

```

SCREEN 4-216. One-line Entry/Output: Displaying Module Traffic

```

CC0> display traffic group tygrp012
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M display traffic group tygrp012
GROUP: tygrp012
-----
FM MOD  CH/PT  CU/TM      SEG CNT  STATE  TO MOD  CH/PT  CU/TM      SEG CNT
              BOARD      (+ = PDD,
              CS/LCH      or PVC,
              PT/LCH      # = RRC)
              PT/DLCI
      12      5              1234567890 REROUTE  4      9      1/2
              TALKING  6      261  3/2      9
      12     10             1239 REROUTE  4      10     1/3
              TALKING  6      262  3/3      5
CC0>

```

SCREEN 4-217. One-line Entry/Output: Displaying Group Traffic

```
CC0> display traffic host cpmo1
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M display traffic host cpmo1
GROUP: cpmm1o1
-----
FM MOD      CH/PT  CU/TM      SEG CNT  STATE  TO MOD      CH/PT  CU/TM      SEG CNT
              BOARD
              CS/LCH
              PT/LCH
              PT/DLCI
              (+ = PDD,
              or PVC,
              # = RRC)
              BOARD
              CS/LCH
              PT/LCH
              PT/DLCI

22          6      1/7          41 TALKORG    8          5/1          736
CC0>
```

SCREEN 4-218. One-line Entry/Output: Displaying Host Traffic

Report Fields

CH/PT

The backplane channel number for which connection information is displayed. For some modules, a physical port number.

CS/LCH

For a session maintenance trunk, the channel set number associated with the trunk and the logical channel number relative to the channel set.

CU/TM BOARD

For some modules, a board or control unit (CU) number for which information is displayed. For an FRM, port number and data link connection identifier (DLCI) are displayed.

FM MOD

If **TYPE** is *group* or *host*, the module address from which the connection has originated.

GROUP

The group name for which connection information is displayed.

HOST

The host name for which connection information is displayed.

MODULE

If **TYPE** is *module*, the module address of the destination port as shown on the right side of the report. If **TYPE** is *group* or *host*, the module addresses for which connection information is displayed. For the originating port, the address is on the left side of the report; for the destination port, the address is on the right side of the report.

PT/DLCI

For an FRM, the port number and the data link connection identifier relative to the port.

PT/LCH

For a CPMML/CPMML-HS, a port number and logical channel number relative to the port.

STATE (+ = PDD, or PVC, # = RRC)

The call state of each channel. A **+** indicates a channel with a predefined destination (PDD) or a permanent virtual circuit (PVC), and a **#** indicates a rerouted call (RRC). Possible call states are:

ACTIVE	The common supervisory channel can accept or originate calls. For an active channel set on a session maintenance trunk, the normal state.
ALIVE	For a TY12 console or host, the state in which it can receive a call. For a TY12 terminal, the state in which it can originate a call.
ATTN	The Control Computer is generating an attention session for this channel.

Report Fields *(continued)*

AUTO_W	A transient state in which a call with a PDD is failing or waiting to retry.
BABBLE	For a TY12, too many invalid destinations; the port (endpoint) is dead.
BACKED	For an active channel set on a session maintenance trunk, all calls associated with a channel set were rerouted.
BAD_STE	An invalid/unexpected/unknown state.
BOOTING	A downloading state in which the Control Computer has just been rebooted or the module is requesting service. The downloading maintenance process polls the board to determine if it contains valid software. If it does not, the RESTORING state is entered and the module is redownloaded. If the module requests a download, the DOWNLOADING state is entered directly.
BREAK	For endpoints with a terminal user interface, the terminal (command mode) that broke its connection and is talking to the Control Computer.
CONFGDL	For downloadable modules, a maintenance channel state in which configuration information is being downloaded to the module.
CONNECT	For a trunk, a call is in progress for that channel.
CONTROL	The channel is in a control session with the Control Computer. Similar to BREAK .
DEAD	The remote device is not responding or an excessive number of consecutive signals (babbling) is detected. Remove and restore the module/port. If the problem persists, check for a hardware malfunction. For an active channel set on a session maintenance trunk, associated calls that were dropped because the Control Computer could not find a backup trunk or any channel set that did not initialize.
DEADEQ	Module software indicated that the trunk is not healthy yet.
DEADTRK	Transition from DEADEQ to ACTIVE ; the Control Computer presumes that the trunk is not healthy.
DIAG	Diagnostics are being run on the module or port.
DIALING	For a terminal, the terminal user is dialing a number and waiting for the call to be answered. For a dialer, the Control Computer is waiting for the modem to dial the number.
D_TALK	For endpoints with a prompted interface or for PDDs that can receive calls, the endpoint is involved in the origination of a call.
DWNLD	Software is being downloaded to the module.
ENDING	The Control Computer is waiting for the remote device to drop and reassert DTR to signal its willingness to accept another incoming call. This state has two substates: waiting for DTR to drop; waiting for DTR to be reasserted.

Report Fields *(continued)*

EP_INIT	The remote device is initializing or is not ready to participate in a call.
FIX	A terminal has dialed the host and hung up before the host has had time to respond to the request for service. For a CPMML/CPMML-HS port, the port has exceeded the threshold for 10 invalid destination requests. The port stays in this state until the device completes its power cycle. If this state occurs during initialization, any channel that is up must be taken down.
I_BUSY	A call survived after a reboot. The Control Computer waits in this state until the endpoint can participate in the call after the reboot.
IDLE	The channel or port is inactive.
INCALL	Calls are being made to an endpoint.
I_DEAD	An inconsistent call (a call in which both ends are not pointing to one another) occurred after a reboot. Or, a call that appeared to be valid after the reboot hung. The Control Computer remains in this state until it has completed endpoint initialization procedures.
I_IDLE	The endpoint is idle after a reboot or during typical call processing conditions.
INITEND/ INITING/ INITWAIT	Indicates initialization when the channel is first being set up.
I_TALK	An endpoint is participating in the receiving side of a call.
I_WAIT	The module is waiting to initialize.
LINKDL	For downloadable modules, a maintenance-channel state in which link control information is being downloaded to the module.
LOOPBK	The module is still in loopback mode from running diagnostics.
OFFHOOK	The attached device is off hook.
ONHOOK	The attached device is on hook.
O_TALK	For endpoints not having a prompted interface or for PDDs that can receive calls, an endpoint is participating in the originating side of a call.
OUTCALL	The state used during call setup to handle calls originated by endpoints not having a prompted interface.
P_CNTRL	The channel is waiting for an acknowledgement to proceed to the CONTROL state.
P_DOWN	The channel is waiting for an acknowledgement to take down the call.

Report Fields *(continued)*

P_IDLE	The channel is waiting for an acknowledgement to proceed to the IDLE state.
P_TALK	The channel is waiting for an acknowledgement to proceed to the TALKING state.
PVC_SUP	The Control Computer is attempting to complete the PVC call.
READING	For a CPM-connected host or CPMML/CPMML-HS port, the channel is waiting for the server name from the host. For a dialer, the channel is trying to determine if the device exists.
REBOOT	For downloadable modules, a communications problem exists on the maintenance channel.
RECEIVE	An endpoint that can receive a call.
REROUTE	For session maintenance configurations, the call on the original channel was rerouted. Reroutes occur because of manual administrator requests or automatic session maintenance.
RESTART	Indicates waiting for a download message (the server and version number) from the maintenance process.
RESTORE	The module is being restored to service and must download software.
RINGING	For a CPM-connected host, or a CPMML/CPMML-HS port, a terminal is calling a host that is not answering; the host channel is ringing and the terminal channel is waiting. Contrast with WAITING . For a dialer, the modem is ready to dial the number and is waiting for a response indicating call success or failure.
SERVING	For a CPM, this channel shows an active UNIX® server on the specified host.
SIMUPST	For downloadable modules, a maintenance channel state which indicates that the module was restored to service and any operations, administration, or maintenance commands can be sent to the module over the maintenance channel. If the module is restored to service and the download is put in the background, the state of the maintenance channel changes several times until it reaches the SIMUPST state.
SIREQ	For a TY, the port is re-initializing universal receiver protocol (URP).
SPLICE	A call splice (call transfer) is in progress.
SUSPEND	For downloadable modules, a maintenance channel state in which the maintenance process completed all services requested and is suspended in the idle state. For CPM and Trunk modules, a call on hold.

Report Fields *(continued)*

TALKING	A call is in progress.
TALKOPD	This field is not used.
TALKORG	For downloadable modules, an originating channel with a call in progress.
TALKREC	For downloadable modules, a receiving channel with a call in progress.
TFADE	A trunk fade has occurred.
UNKNOWN	A port was removed from service.
UPLOAD	The module is uploading text or data.
W_ACK	The trunk channel is waiting for the remote node to acknowledge whether call setup was successful. The remote node might not acknowledge because of a time out, it might have failed, or a collision might have occurred.
W_ADAIL	A channel is waiting for an acknowledgement from a dial signal.
W_ADRPR	The terminal is waiting to go into originate mode after timing out at the destination prompt.
W_ATALK	A channel is waiting for an acknowledgement to go to TALKING state.
WASDIAL	A valid dialing state for all non-PDD originating ports. For ports not configured for autobaud, the state users enter after specifying a dial string from a destination port and getting timed-out by the Control Computer. For ports configured for autobaud, the state entered when the Control Computer is waiting for user input to determine the appropriate baud rate of the port.
W_CONN	For a CPM-connected host, a transitional state of waiting to connect or that time between dialing and connecting.
W_DNWLD	The maintenance process is waiting for the module to notify that it is ready to download.
W_DSTRG	The trunk channel told the remote node that it is waiting to receive the dial string.
W_ING	The dial string was collected, the call was forwarded to its destination, and the originator is waiting for an answer.
W_INIT	Modules are waiting to begin keep-alive polling.
W_LACK1	The trunk channel is waiting for the first acknowledgement from the destination in order to establish a switch connection.

Report Fields *(continued)*

W_LACK2	The trunk channel is waiting for the second acknowledgement from the destination to accept (acknowledge) the call.
W_NET1	This field is not used.
W_NET2	This field is not used.
W_NUM	For a CPM-connected host or a CPMML/CPMML-HS port, the host initiated a call, was unsuccessful, and is waiting to be torn down. The handshaking sequence over the common signaling channel must be completed first.
W_O	The trunk channel is trying to call an endpoint. It has sent a call request to the remote node and is waiting for it to acknowledge its readiness to accept the dial string.
W_RESET	A port is not in service; the module is waiting for the port to be restored so it can be reset.

TO MOD

If **TYPE** is *group* or *host*, the module address of the module that is the destination of the connection.

System Responses

This section contains system responses for **display traffic**. It is organized by the key phrase that prefaces the response.

INFO:

**No connection data for <module <addr>/channel set <num>>;
session maintenance reroute in progress.**

Traffic data was requested for a module or channel set that is undergoing a reroute or is negotiating to revert to its original route.

INPUT ERROR:

Cannot display connection data for a specific channel set in a session maintenance trunk.

If a specific channel set is input on the command line, connection data is not displayed.

Cannot display traffic for second board of two-board module.

Connection information can only be provided for the first board of a two-board module (Trunk-DDS, SLM).

Concentrator Does Not Exist: <addr>

Information was not administered for the specified concentrator.

Group Does Not Exist: <name>

Information was not been entered for the specified group.

Host Does Not Exist: <name>

Information has not been entered for the specified host.

Input String too Long: <string>

The specified parameter contained too many characters. When you are reprompted for this parameter, enter the correct number of characters.

Invalid Concentrator Address: <addr>

Concentrator number entered exceeds allowable limit. Enter a valid address and retry the command.

Invalid Hardware type: Common Equipment

Connection information cannot be displayed for common node equipment.

Invalid module address.

The module address specified is not valid for the attempted operation. Enter the correct module address and retry the command.

Invalid Number: <num>

An invalid number was entered (for example, -1).

Module Does Not Exist: <addr>

Information has not been entered for the specified module.

INPUT ERROR: *(continued)***No Default Allowed:**

The parameter does not have a default.

Not an allowed value: <value>

The value entered is prohibited.

Parameter out of Range: <range>

The parameter entered is prohibited.

Slot is reserved: <addr>

The specified module address is reserved and cannot be used for this type of module.

NO KEY PHRASE:**Command manually terminated.**

The key was pressed at the system console before the report was generated.

NO CHLS IN SERVICE

The command processor could not find any in-service channels for the specified module. Retry the command. If the message reappears, use **verify module** for a detailed display of the module status.

NO CHLS IN USE FOR GROUP

The command processor could not find any in-service channels for the specified group. Retry the command. If the message reappears, use **verify group** for a detailed display of the group status. (You can execute **display traffic** regardless of the service state of channels. However, detailed information is only displayed if channels are in service.)

NO MODULES IN DATABASE

The command processor could not find the module entries in the database. Retry the command. If the message reappears, use **verify module** for a detailed display of the module status.

NO SWITCH MEMORY <MOD/PORT> <addr/num>

The command processor could not access switch memory to retrieve module/port packet count information. Retry the command. If the message reappears, use **dstat** for a detailed display of the module/port status.

Not an allowed value.

The value entered is prohibited. Enter a correct value and retry the command.

NOT UNIQUE ENOUGH

The abbreviation input is too brief. (For example: *t* for traffic is too brief; at least *tr* is required.)

NO KEY PHRASE *(continued)*

OUTPUT MANUALLY TERMINATED

The command exited without completing because was pressed.

Parameter Out of Range: <num>

A module number such as 0 or a number greater than the maximum allowed slot number for node cannot be specified.

Switch memory access failed = <num>

The command processor could not access switch memory to retrieve the packet count for the port. Retry the command. If the message reappears, use **dstat** for a detailed display of the module port status and report the error number to the CAC.

Unrecognized arg type.

Only modules, groups, or hosts can be entered. Enter the type for which information is to be displayed and retry command.

utilsh command set

The following commands can be used when the **utilsh** command invokes the utility shell:

- **cd** (change directory)
- **cp** (copy)
- **dbaudit**
- **dbresize**
- **dbupgrd**
- **diskcopy**
- **diskcpvfy**
- **diskvfy**
- **dupdisk**
- **echo**
- **exit**
- **fsck** (file system check)
- **loadrel**
- **ls** (list the contents of a system directory)
- **mount**
- **mv** (move a file from one directory to another)
- **pipe** (|)
- **reboot**
- **rm** (remove a file from the system)
- **stop**
- **sync** (synchronize the database)
- **umount**

utilsh

The **utilsh** command enables you to invoke a shell utility program, or a *mini shell*. Once resident, the mini shell implements a command repertoire of memory-resident and disk-resident commands that enable you to perform various system administration functions.

Syntax

You can input **utilsh** in one-line entry only.

```
CC0> utilsh
```

Parameters

None.

```
CC0> utilsh
MINI-SH: What can I do for you?
UTILITY> cp <filename1> <filename2>
```

SCREEN 4-219. One-line Entry/Output: Accessing the Utility Shell to Copy Files

System Responses

The only system response invoked by **utilsh** is the following greeting:

```
MINI-SH What can I do for you?
```

Loader Commands

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Loader Commands

The loader mode commands enable the network administrator to display a directory listing of the active file system or a list of available loader mode commands, go into monitor mode, or load and run a specified program. The prompt that appears in loader mode is **LOADER>**.

Loader Mode Access

1. When the controller mode switch is in the ENABL position, loader mode can be entered from operations mode with the **sync** and **stop** commands.
 - a. When **stop** is input, the system resets and pauses in loader mode for 45 seconds to wait for command entry.

If an entry is *not* made during this 45-second period, the Control Computer boots the appropriate program. For a CCM system, the *dkc6* program is booted for the active Control Computer or *bstat6* is booted for the standby Control Computer. For an ECPU system, the *dkc3* program is booted for the active Control Computer or *bstat3* is booted for the standby Control Computer.

If an entry is made during this 45-second period, the timer waits 45 seconds for each character entered before booting the system. If you input a command before the time-out, the command processor executes the command.
 - b. You can also enter loader mode from utility mode with the **stop** utility command. The **LOADER>** prompt on screen indicates loader mode.
2. If the controller mode switch is in the DIAG position because console security is being initially administered or the password is being changed, you can enter loader mode from monitor mode via the monitor **boot** command.
 - a. You can also enter loader mode from utility mode with the **reboot** command. (When using **reboot**, the controller mode switch should be in the DIAG position; otherwise an automatic reboot occurs.
 - b. When you enter loader mode with the controller mode switch in the DIAG position, a time-out does not occur and the Control Computer remains in loader mode until you input a command.)

Command Conventions and Entry Method

The loader commands are entered in lowercase letters, as a one-line entry. They do not have any abbreviations. Some commands have parameters that can be specified.

Throughout these sections, reference is made to primary and secondary buses and their disk and tape drives (their devices). The words *primary* and *secondary* refer to the Control Computer being described or used at the moment.

On-line Help

If you enter **help** or **?** at the **LOADER>** prompt, a help screen displays the names of the loader commands, their syntax, and a brief definition. See **help (?)** detailed in this chapter.

System Responses

Unlike the operations commands, the system responses for the loader commands are not categorized by type of error. The appropriate system responses are explained within each command described.

Command Set

The commands available in loader mode include **dir**, **help (?)**, **load**, **monitor**, and **run**.

dir

The **dir** command enables you to display a list of files in a directory.

Syntax

You can input **dir** in one-line entry only.

```
LOADER> dir [<device>[/<partition>]:]<directory>]]
```

Valid parameter combinations are:

```
<device>/<partition>:<directory>
<device>/<partition>:
<device>:<directory>
<device>:
```

Parameters

This section contains explanations of parameters used with **dir**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

directory

An optional parameter specifying the name of the directory for which contents are to be listed. The default is the root (/) directory. The colon is required even if no directory is specified.

device

An optional parameter specifying the device to be: *p*, which is the primary disk (the default); *s*, which is the secondary disk; [*p*]*t*, which is the primary tape; *st*, which is the secondary tape.

partition

An optional parameter specifying the device partition to be: *0*, which is the active file system (the default) or *3*, which is the standby file system. Type the slash only if you specify a partition.

```
LOADER> dir
/:
bstat3!      bstat6!      build-id      ccm/          dbtemplates/
diagnostics/ dk3boot*      dk3!          dk6!          dk6proc/
download/    dvbin/        ecpu/         etc/          fs0/
fs1/         fs2/          fs3/          fs4/          fsaux/
lost+found/  stand/        temp
LOADER>
```

SCREEN 5-1. One-line Entry/Output: Displaying Files on Primary Disk Partition 1

dir

```
LOADER> dir p/3:
/:
dev/          diag/          diagnostics/  dkcpoc/      download/
dvbin/        ecpu/          etc/          fs0/          fs1/
fs2/          fs3/          fs4/          fsaux/        lost+found/
stand/        build-id      bstat3!      dk3!          dk3boot*
bstat6!      dk3!
LOADER>
```

SCREEN 5-2. One-line Entry/Output: Displaying Files on Primary Disk Partition 3

System Responses

The following typical error conditions result from incorrect entry of **dir**.

Device syntax error.

You omitted a colon after device or partition.

Device '<partition/number>' does not contain a file system.

You specified an invalid partition.

input was not found.

You specified a nonexistent directory.

Secondary Disk failed (err=7) cmd: 1a 00 01 00 14 00

Device 's' is not responding.

You specified an nonexistent device (secondary disk).

help (?)

The **help** command or **?** enables you to display a list of commands for the loader mode.

Syntax

You can input **help** or **?** in one-line entry only.

```
LOADER> help
```

- or -

```
LOADER> ?
```

Parameters

None

```
LOADER> ?
run      [d[/nn]:][program]  Load and run program
load     [d[/nn]:][program]  Load program and enter PROM monitor
monitor  Enter PROM monitor
dir      [d[/nn]:][directory] Display files in directory.  Files that are
                                stand-alone executables are marked with a
                                trailing '!', normal executable files are marked
                                with a '**', and directories are marked with '//'.

                                Items enclosed in []'s are optional.

For the "run" and "load" commands, the program is loaded from the firmware boot
device unless an alternative logical device is specified.  An alternative
logical device is specified by one of 'p', 's', 't', or 'st', optionally
followed by a '/' and partition number.  A ':' terminates the specification.
For example: "run p/0:/diag/dki" would load and run "/diag/dki"
from partition 0 of the primary disk.  The program booted if none is
specified is "dkc3" ("bstat3") on an active (standby) CC.

"monitor" is used to return to the PROM level 'MONITOR>' prompt.  "load" is
used to load a program and debug it via the PROM's "sdb" facilities.

LOADER>
```

SCREEN 5-3. One-line Entry/Output: Displaying Information with the ? Command

System Responses

Other than the output of the **help** screen, the **help** command does not have any associated responses.

load

The **load** command loads a specified program into Control Computer memory and transfers to monitor node.

Syntax

You can input **load** in one-line entry only.

```
LOADER> load [<device>[/<partition>]:[<program>]]
```

Valid parameter combinations are:

```
<device>/<partition>:<program>  
<device>/<partition>:  
<device>:<program>  
<device>:
```

Parameters

This section contains explanations of parameters used with **load**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

device

An optional parameter specifying the device from which the program is to be loaded as: *p*, which is the primary disk (the default); *s*, which is the secondary disk; [*p*]*t*, which is the primary tape; *st*, which is the secondary tape.

partition

An optional parameter specifying the device partition as: *0*, which is the active file system (the default) or *3*, which is the standby file system. Type the slash only if you specify a partition.

program

An optional parameter specifying the name of the program to be loaded. For a CCM system, the defaults are *dkc6* for the active Control Computer and *bstat6* for the standby Control Computer. For an ECPU system, the defaults are *dkc3* for the active Control Computer and *bstat3* for the standby Control Computer.

```
LOADER> load p:dkc6
Loading text
Loading data
Clearing bss

*** DKC Loader Monitor <Release> for the CCM ***

  Copyright <year(s)> Lucent Technologies
    All Rights Reserved

    Built on:
* <Day> <Month> <Date> <hh:mm:ss> EST <year>*
  <passed/failed>: <test name>
For HELP enter: ? 
MONITOR>
```

SCREEN 5-4. One-line Entry/Output: Loading dkc6 from the Primary Disk of a CCM System

System Responses

If the **load** command completes successfully, the response is similar to that shown in the example.

Device syntax error

A colon was omitted after the device or partition.

<program>: Not found.

LOADER>

The requested program cannot be found or is invalid.

monitor

The **monitor** command enables you to change from loader mode to monitor mode.

Syntax

You can input **monitor** in one-line entry only.

```
LOADER> monitor
```

Parameters

None.

```
LOADER> monitor
*** DKC Loader Monitor <Release> for the CCM ***

  Copyright <year(s)> Lucent Technologies
    All Rights Reserved

    Built on:
  * <Day> <Month> <Date> <hh:mm:ss> EDT <year>*
    <passed/failed>: <test name>

For HELP enter: ? 
MONITOR>
```

SCREEN 5-5. One-line Entry/Output: Going from Loader Mode to Monitor Mode on a CCM System

System Responses

Other than the output of the monitor mode self-test screen, the **monitor** command does not have any associated system responses.

run

The **run** command, when followed by a valid device and a valid program name, loads and runs the program. If **run** is entered at the **LOADER>** prompt for a CCM system, the *dkc6* program is executed as the default on an active Control Computer and the *bstat6* program is run as the default on a standby Control Computer. If **run** is entered at the **LOADER>** prompt for an ECPU system, the *dkc3* program is executed as the default on an active Control Computer and the *bstat3* program is run as the default on a standby Control Computer.

The **run** command is also used to run diagnostic programs from disk or tape and disk certifier programs. The diagnostic programs allow you to test the central processor (the controller board — instructions, memory management unit, timer, local RAM), the Switch, the disk/tape system and its controller. In addition, the CIM and CTRM modules can be tested in BNS-2000 nodes and the Clock and Repeater modules can be tested in BNS-2000 VCS nodes. The Stratum 4 Clock can be tested in BNS-2000 nodes with Xswitches. The disk certifier program allows you to salvage a disk with bad blocks.

Syntax

You can input **run** in one-line entry only. Pressing at the **LOADER>** prompt does not execute a program; output is the **LOADER>** prompt.

```
LOADER> run [<device>[/<partition>]:]<program>]]
```

Valid parameter combinations are:

```
<device>/<partition>:<program>
<device>/<partition>:
<device>:<program>
<device>:
```

Parameters

This section contains explanations of parameters used with **run**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

device

An optional parameter specifying the device from which the program is to be loaded and executed as *p*, which is the primary disk (the default); *s*, which is the secondary disk; *[p]t*, which is the primary tape; *st*, which is the secondary tape.

partition

An optional parameter specifying the device partition as: *0*, which is the active file system (the default) or *3*, which is the standby file system. Type the slash only if you specify a partition.

program

An optional parameter specifying the name of the program to be run as *dkc6/bstat6* for a CCM system or *dkc3/bstat3* for an ECPU system.

run

CAUTION: The default programs *dkc6/bstat6* or *dkc3/bstat3* should be run in all instances unless otherwise instructed by the Customer Assistance Center (CAC).

```
LOADER> run p/0:dkc3
Loading text
Loading data
Clearing bss

    Booted from Device: 5/0
    Local Memory Size = <number>
    Available Memory: <number> End of Supervisor: <number>

*** Trying to Boot From Primary Disk ***

A RECOVERY REBOOT
    Reason: SOFTWARE INITIATED BY ADMINISTRATOR

    Active CC
    Loading text
    Loading data
    Clearing bss

    Booted from Device: 5/0
    Local Memory Size = <number>
    Available Memory: <number> End of Supervisor: <number>

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    <any appropriate alarms would appear here>
```

SCREEN 5-6. One-line Entry/Output: Running dkc3 on Primary Disk, Partition 0, of an ECPU System*

* The controller mode switch must be in the ENABL position.

One-line Entry/Output: Running dkc3 on Primary Disk, Partition 0, of an ECPU System
(continued)

```

BOOTING CC0>
*** DKC Loader Monitor <Release> ***

  Copyright <year(s)> Lucent Technologies
    All Rights Reserved

      Built on:
* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*

For HELP enter: ? 
MONITOR> boot
<remaining system output>

```

```

LOADER> run diag/dki
Loading text
Loading data
Clearing bss

  CCM BOARD IS IN SLOT NUMBER 14

  CONTINUE [y,n: +(y)]: +
  Give the shelf where the Clock module is (range 0-7 with default 0): 0

  DKI DIAGNOSTICS MAIN MENU:
    1. MAINTENANCE LED TEST (THIS TEST HAS BEEN DELETED)
    2. CONTROL REGISTER AND BASIC ACCESS TEST
    3. BASIC TRANSMIT/RECEIVE TEST
    4. SOFTWARE STATUS WORD TEST (CAN'T BE RUN ON STANDBY CC)
    5. INTERRUPT TEST
    6. MISCELLANEOUS FIFO TEST
    7. FIFO STATUS TEST
    8. SWITCH MODULE RESET TEST (CAN'T BE RUN ON STANDBY CC)
    9. FAST TRANSFER TEST
   10. EXTENDED CHANNEL BITS TEST (CAN'T BE RUN ON STANDBY CC)
   11. RESET BUTTON TEST
   12. ALL OF THE ABOVE
   13. FACTORY TEST (TESTS 2 - 7, 9, 10)
   14. ENHANCED TRANSMIT TEST (CAN'T BE RUN ON STANDBY CC)
   15. RETURN TO LOADER MODE
  SELECT TEST [1 - 15]: 3

  Loop on error [y,n: +(n)]: +

  BASIC TRANSMIT/RECEIVE TEST: (M1) Starts
  BASIC TRANSMIT/RECEIVE TEST: (M1) Passed

```

SCREEN 5-7. One-line Entry/Output: Running Control Computer Diagnostics on a CCM System

run

One-line Entry/Output: Running Control Computer Diagnostics on a CCM System (continued)

```
BASIC TRANSMIT/RECEIVE TEST: (ADA) Starts
BASIC TRANSMIT/RECEIVE TEST: (ADA) Passed
DKI DIAGNOSTICS MAIN MENU:
  1. MAINTENANCE LED TEST (THIS TEST HAS BEEN DELETED)
  2. CONTROL REGISTER AND BASIC ACCESS TEST
  3. BASIC TRANSMIT/RECEIVE TEST
  4. SOFTWARE STATUS WORD TEST (CAN'T BE RUN ON STANDBY CC)
  5. INTERRUPT TEST
  6. MISCELLANEOUS FIFO TEST
  7. FIFO STATUS TEST
  8. SWITCH MODULE RESET TEST (CAN'T BE RUN ON STANDBY CC)
  9. FAST TRANSFER TEST
 10. EXTENDED CHANNEL BITS TEST (CAN'T BE RUN ON STANDBY CC)
 11. RESET BUTTON TEST
 12. ALL OF THE ABOVE
 13. FACTORY TEST (TESTS 2 - 7, 9, 10)
 14. ENHANCED TRANSMIT TEST (CAN'T BE RUN ON STANDBY CC)
 15. RETURN TO LOADER MODE
SELECT TEST [1 - 15]: 15
*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type ? for help
LOADER>
```

```
LOADER> run /diag/dki
Loading text
Loading data
Clearing bss

SCSI/DKI BOARD IS IN SLOT NUMBER 14

CONTINUE [y,n: +(y)]: +
Give the shelf where the Clock module is (range 0-7 with default 0): 0
```

SCREEN 5-8. One-line Entry/Output: Running Control Computer Diagnostics on an ECPU System

One-line Entry/Output: Running Control Computer Diagnostics on an ECPU System

(continued)

```

DKI DIAGNOSTICS MAIN MENU:
  1. MAINTENANCE LED TEST (THIS TEST HAS BEEN DELETED)
  2. CONTROL REGISTER AND BASIC ACCESS TEST
  3. BASIC TRANSMIT/RECEIVE TEST
  4. SOFTWARE STATUS WORD TEST (CAN'T BE RUN ON STANDBY CC)
  5. INTERRUPT TEST
  6. MISCELLANEOUS FIFO TEST
  7. FIFO STATUS TEST
  8. SWITCH MODULE RESET TEST (CAN'T BE RUN ON STANDBY CC)
  9. FAST TRANSFER TEST
 10. EXTENDED CHANNEL BITS TEST (CAN'T BE RUN ON STANDBY CC)
 11. RESET BUTTON TEST
 12. ALL OF THE ABOVE
 13. FACTORY TEST (TESTS 2 - 7, 9, 10)
 14. ENHANCED TRANSMIT TEST (CAN'T BE RUN ON STANDBY CC)
 15. RETURN TO LOADER MODE
SELECT TEST [1 - 15]: 3
Loop on error [y,n: +(n)]: +
BASIC TRANSMIT/RECEIVE TEST: Starts
BASIC TRANSMIT/RECEIVE TEST: Passed
DKI DIAGNOSTICS MAIN MENU:
  1. MAINTENANCE LED TEST (THIS TEST HAS BEEN DELETED)
  2. CONTROL REGISTER AND BASIC ACCESS TEST
  3. BASIC TRANSMIT/RECEIVE TEST
  4. SOFTWARE STATUS WORD TEST (CAN'T BE RUN ON STANDBY CC)
  5. INTERRUPT TEST
  6. MISCELLANEOUS FIFO TEST
  7. FIFO STATUS TEST
  8. SWITCH MODULE RESET TEST (CAN'T BE RUN ON STANDBY CC)
  9. FAST TRANSFER TEST
 10. EXTENDED CHANNEL BITS TEST (CAN'T BE RUN ON STANDBY CC)
 11. RESET BUTTON TEST
 12. ALL OF THE ABOVE
 13. FACTORY TEST (TESTS 2 - 7, 9, 10)
 14. ENHANCED TRANSMIT TEST (CAN'T BE RUN ON STANDBY CC)
 15. RETURN TO LOADER MODE
SELECT TEST [1 - 15]: 15
*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type ? for help
LOADER>

```

run

System Responses

If **run** completes successfully, the responses are similar to those shown in the entry/output example. If **run** does not complete successfully, the following responses are output:

Device syntax error

A colon was omitted after the device and partition.

<program>: Not found.

LOADER>

The requested program cannot be found (for example, your program did not match an existing program).

Monitor Commands

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Monitor Commands

The monitor commands enable the network administrator to perform system-related maintenance functions in a low-level processing state called *monitor mode*. Some of these functions include running diagnostics on the controller board and the disk system, copying data from one device to another, or bringing the disk system up from a cold start. Call processing is suspended while these commands are in use; however, any call already in progress continues.

Monitor Mode Access

When the system is first powered up, the firmware outputs a banner screen and the **MONITOR>** prompt appears. Call setup and takedown are now suspended. For a CCM system, this screen appears as the following:

```
*** DKC Loader Monitor <Release> for the CCM ***
Copyright <year(s)> Lucent Technologies
All Rights Reserved

Built on:
* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*
  <passed/failed>: <test name>
  .
  .
  .

For HELP enter: ? 
MONITOR>
```

The **MONITOR>** prompt is the first-level boot prompt at which any monitor mode command can be entered. When the controller mode switch is in the ENABL position, monitor mode can be accessed from loader mode by entering the **monitor** command at the **LOADER>** prompt.

When controller mode switch is in the ENABL position, operations mode can also be entered directly from monitor mode by entering the **boot** command at the **MONITOR>** prompt.

To access monitor mode from other node operating modes, refer to the **Node Commands Overview**.

Command Conventions and Entry Method

The monitor mode commands consist of verbs only. Their entry is similar to the one-line entry used for the operations commands. However, except for the **boot** command, abbreviations are not accepted because the full monitor commands (the verbs) are already abbreviated. For example, **di** has already been abbreviated for *diagnose*.

All monitor commands, except for the **boot** and **help**, require parameter specification on the command line. With the **di** command, for example, you must specify the bit pattern representing the specific test to be run. If you fail to specify a parameter value on the command line, you do not receive any additional prompts.

Throughout these sections, reference is made to primary and secondary buses and their disk and tape drives. The words *primary* and *secondary* are defined in relation to the Control Computer being discussed, described, or used at the moment.

On-line Help

When you are at the **MONITOR>** prompt, you can request a help screen by entering **?** or by entering the command **help**. The help screen lists all monitor mode commands and their options.

System Responses

The system responses for the monitor commands are not as extensive as the operations commands, nor are they categorized by type of error. As such, the system responses for each monitor command are explained following the command entry/output examples.

Command Set

The commands available in monitor mode include **boot**, **dcc**, **di**, and **help (?)**.

boot

The **boot** command enables you to bring up the disk system from a cold start. If a device is not specified, the system attempts to boot from the primary bus; however, you can specify a logical device from which to boot the system and an optional partition on the device.

Before executing **boot**, put the Control Computer in monitor mode by setting the controller mode switch to the ENABL position. (If the switch is in the DIAG position, **boot** puts you in loader mode.)

Syntax

When **boot** is entered without an argument with the intent of having the Control Computer booted as *active*, the Control Computer first tries to boot from the active file system (partition 0 on its primary disk). If this boot fails, the Control Computer tries to boot from the active file system on its secondary disk. If this boot fails, no other device is tried. You can try booting the Control Computer as standby.

When **boot** is entered without an argument with the intent of having the Control Computer booted as *standby*, the Control Computer first tries to boot from the standby file system (partition 3 on its primary disk). If this boot fails, the Control Computer tries to boot from the standby file system on its secondary disk. If this boot fails, no other device is tried. In either instance, contact your Lucent support group.

If the file system state flag of the active (root) file system or the standby (auxiliary) file system was raised during the boot process for BNS-2000 nodes, the BNS-2000 system outputs the following message along with the output of the **fsck** utility command.

```
Startup: Checking the root file system --
Startup: Checking the auxiliary file system --
<output of fsck>
```

If the root file system was checked, a Control Computer reboot immediately follows the file system check.

You can input **boot** in one-line entry only.

```
MONITOR> boot [<device> [/ <partition>]]
```

Parameters

This section contains explanations of parameters used with **boot**. Refer to Syntax for prompting sequence, system defaults, and parameter options.

device

An optional parameter specifying the device from which the system is to be booted. Where: *p* is the disk on the primary bus; *s* is the disk on the secondary bus; [*p*]*t* is the tape on the primary bus; *st* is the tape on the secondary bus. Either *boot* or *boot p* brings the system up from the primary disk.

boot

Parameters *(continued)*

partition

An optional parameter specifying the device partition as: 0, the active file system; or 3, the standby file system. Type the slash only if you specify the partition.

NOTE: Do not boot the active Control Computer from the standby file system because the standby file system does not contain all the software needed to make a node operational.

```
MONITOR> boot p
*** Trying To Boot From Primary Disk ***

A RECOVERY REBOOT
  Reason: SOFTWARE INITIATED BY ADMINISTRATOR

  Active CC
  Loading text
  Loading data
  Clearing bss

  Booted from Device: 5/0
  Local Memory Size = <number>
  Available Memory: <number> End of Supervisor: <number>

      <Product> <Release> <System>
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  <any appropriate alarms would appear here>

BOOTING CC0>
```

SCREEN 6-1. One-line Entry/Output: Booting from Primary Disk*

* The controller mode switch must be in the ENABL position.

```

MONITOR> boot s

*** Trying To Boot From Secondary Disk ***

A RECOVERY REBOOT
  Reason: SOFTWARE INITIATED BY ADMINISTRATOR

Active CC
Loading text
Loading data
Clearing bss

Booted from Device: 5/0
Local Memory Size = <number>
Available Memory: <number> End of Supervisor: <number>

               <Product> <Release> <System>
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<any appropriate alarms would appear here>

BOOTING CC0>

```

SCREEN 6-2. One-line Entry/Output: Booting from the Secondary Disk*

* The controller mode switch must be in the ENABL position.

```
MONITOR> boot s
*** Trying To Boot From Secondary Disk ***
Secondary SCSI ID 0 not ready, reason: 7(select timeout)
*C REPORT FAILURE: unable to boot from disk
*** DKC Loader Monitor <Release> for the CCM ***
  Copyright <year(s)> Lucent Technologies
    All Rights Reserved
    Built on:
  * <Day> <Month> <Date> <hh:mm:ss> EDT <year>*
    <passed/failed>: <test name>
      .
      .
      .
For HELP enter: ? 
MONITOR>
```

SCREEN 6-3. One-line Entry/Output: Booting the CCM System Unsuccessfully from the Secondary Disk

System Responses

The following typical error conditions result from the incorrect entry of **boot**:

INPUT ERROR: bad device name

Something other than **p**, **pt**, **t**, **s**, or **st** was specified for the device.

INPUT ERROR: bad slice number

A slash was entered after the device without specifying a partition number.

INPUT ERROR: invalid command.

An unknown command was entered.

dcc

The **dcc** command enables you to copy a block of data from one specified device to another specified device configured in the Control Computer. If any data exists in the target area, the copied data overwrites the existing data. The **dcc** command routine consists of the following:

- reading a block of data from the source device
- writing that block of data to the target device
- reading the block of data back from the target device
- verifying the data

NOTE: When using **dcc** to copy the *vtoc* from tape to disk, **dcc** might fail due to problems associated with the peripheral such as the device itself is faulty, the device is installed incorrectly, or the device is inaccessible. If device-related system responses are generated, use **di** to diagnose the device and/or inspect the device to determine whether it was installed properly.

Syntax

You can input **dcc** in one-line entry only. The first device listed in the command string is the source and the second device is the target. Both must be specified.

```
MONITOR> dcc <source> <target>
```

Parameters

This section contains explanations of parameters used with **dcc**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

source

Specifies the device from which data is to be copied. The format of this parameter is

<device>[/<partition>]

Where: <device> is *p*, the disk on the primary bus; *s*, the secondary disk; [*p*]*t*, the primary tape; or *st*, the secondary tape. The optional parameter <partition> is *0*, the active file system; *3*, the standby file system; or *15*, the whole device. The slash is entered only when a partition is specified.

target

Specifies the device to which data is to be copied. The format of this parameter is

<device>[/<partition>]

Where: <device> is *p*, the disk on the primary bus; *s*, the secondary disk; [*p*]*t*, the primary tape; or *st*, the secondary tape. The optional parameter <partition> is *0*, the active file system; *3*, the standby file system; or *15*, the whole device.

```
MONITOR> dcc p s
Begin verify
MONITOR>
```

SCREEN 6-4. One-line Entry/Output: Copying Data from Disk on Primary Bus to Disk on Secondary Bus

System Responses

After the copy is completed, the copy is verified. The following responses could occur during or after **dcc** command execution:

Begin verify

The initiation of verification process has begun. When the verification is completed, the **MONITOR>** prompt returns.

Copy not done. MONITOR>

A character other than y was entered at the **FROM <num1> won't fit in TO <num2> Continue? [y/n]:** prompt. If y is entered, the copy—which might not be valid—is made (up to <num2> bytes).

FROM <num1> won't fit in TO <num2> Continue? [y/n]:

The data on the source device consumes more space than the target device can accommodate. If the command fails due to a hardware error, an appropriate code is displayed, followed by the **MONITOR>** prompt.

INPUT ERROR: bad slice number

INPUT ERROR: bad device name

Invalid parameters have been entered.

di

The **di** command enables you to test the sanity of the Control Computer, the interface circuitry on the controller board, and the disk and tape drives. These diagnostics reside in the Control Computer read-only memory (ROM).

NOTE: Before you begin this procedure make sure you are using a formatted disk.

Syntax

You can input **di** in one-line entry only. For an abbreviated version of the list of diagnostics, input ? or help at the **MONITOR>** prompt.

```
MONITOR> di <bit pattern>
```

Parameters

bit pattern

A string of four hexadecimal characters (0 through f) specifying which of the following tests is to be run. To run more than one test in succession, add the individual numbers of the tests and enter the sum in hexadecimal notation as the bit pattern. (If you are not familiar with hexadecimal notation, refer to the note after the list of tests.)

- f7dd** Initiates all tests for the CCM system.
- f7ff** Initiates all tests for the ECPU system.
- 0001** For the CCM and the ECPU systems, initiates a nondestructive local RAM test. If this test fails, replace the board.
- 0002** For an ECPU system, initiates a USART test that writes different data patterns to register 2 (the interrupt register) to determine if the device can respond correctly to CPU reads/writes. If this test fails **consistently**, replace the board.
- 0004** For the CCM and the ECPU systems, initiates the Timer Test that tests the basic operation of the on-board timers and their ability to generate processor interrupts.
- 0008** For the CCM and the ECPU systems, initiates the EPROM Check Sum Test that performs a checksum calculation on the entire ROM and verifies it against a checksum value stored in ROM. If this test fails sporadically, the testing process was probably interrupted while verifying the checksum. If this test fails consistently, the ROMs must be replaced. Return the board for repair.

Parameters *(continued)*

- 0010** For a CCM system, initiates the memory management unit (MMU) test. For an ECPU system, initiates the destructive off-board RAM test. (The ECPU test is intended for factory use only.)
- 0020** For an ECPU system, initiates the nondestructive off-board RAM test. (This test is intended for factory use only.)
- 0040** For the CCM and the ECPU systems, initiates the DKI test.
- 0080** For a CCM system, initiates the bus error and DRAM parity test. For an ECPU system, initiates the Status Register test.
- 0100** For the CCM and the ECPU systems, initiates the primary disk test.
- 0200** For the CCM and the ECPU systems, initiates the primary tape test. (Normally, a tape is not attached to the primary SCSI for the CCM system.)
- 0400** For the CCM and the ECPU systems, initiates the primary SCSI test.
- 1000** For the CCM and the ECPU systems, initiates the secondary disk test.
- 2000** For the CCM and the ECPU systems, initiates the secondary tape test.
- 4000** For the CCM and the ECPU systems, initiates the secondary SCSI test.
- 8000** For the CCM and the ECPU systems, initiates the destructive local RAM test.

NOTE: To calculate a hexadecimal sum in order to perform multiple tests from one command iteration, start by adding each of the four columns separately in decimal arithmetic. If all sums are nine or less, simply use the four-digit total as illustrated in Example A.

If the sum of the right column is 10 or more, do not carry. (Only the right column can total a two-digit decimal number.) Replace the two-digit decimal sum with a single hexadecimal value from the following list: 10 = a, 11 = b, 12 = c, 13 = d, 14 = e, 15 = f. As Example B shows, the sum is 13 in decimal arithmetic, *d* in hexadecimal notation.

Example A	
0001	Local RAM
0008	EPROM
0100	Primary disk
+ 2000	Secondary tape

2109	

Example B	
0001	Local RAM
0004	Timer
0008	EPROM
0100	Primary disk
+ 2000	Secondary tape

210d	

```

MONITOR> di f7dd
*** DKC Loader Monitor <Release> for the CCM ***

  Copyright <year(s)> Lucent Technologies
    All Rights Reserved

    Built on:
  * <Day> <Month> <Date> <hh:mm:ss> EST <year>*
    <passed/failed>: <test name>
      .
      .
      .
For HELP enter: ? 
MONITOR>

```

SCREEN 6-5. One-line Entry/Output: Running All Tests on a CCM System

```

MONITOR> di f7ff
*** DKC Loader Monitor <Release> ***

  Copyright <year(s)> Lucent Technologies
    All Rights Reserved

    Built on:
  * <Day> <Month> <Date> <hh:mm:ss> EST <year>*
    <passed/failed>: <test name>
For HELP enter: ? 
MONITOR>

```

SCREEN 6-6. One-line Entry/Output: Running All Tests on an ECPU System

System Responses

If the controller mode switch is in the DIAG position, one or more status messages might appear before the line reading **DKC Loader Monitor ...**

The messages evoked from the execution of **di** are in this form:

```

<Primary/Secondary> <Disk/Tape>:
sense: nn nn nn nn nn nn nn nn nn nn nn nn nn nn nn nn nn

```

help (?)

help (?)

The **help** or **?** command enables you to display a list of monitor mode commands.

Syntax

You can input **help** or **?** in one-line entry only.

```
MONITOR> help
```

- or -

```
MONITOR> ?
```

Parameters

None.

```
MONITOR> ?
Command Options:
  dcc <dev> <dev> Copy first device to second
  boot <dev>      Boot system (dev optional)
where: <dev> is P|S|T|ST[/0-15]
  di  f7dd        Diagnose system - each bit below
      0001        Non-destructive local RAM test
      0004        Timer test
      0008        EPROM Checksum test
      0010        MMU test
      0040        DKI test
      0080        Bus Error and DRAM Parity test
      0100        Primary Disk test
      0200        Primary Tape test
      0400        Primary SCSI test
      1000        Secondary Disk test
      2000        Secondary Tape test
      4000        Secondary SCSI test
      8000        Destructive local RAM test
MONITOR>
```

SCREEN 6-7. One-line Entry/Output: Displaying a List of Monitor Mode Commands on a CCM System

```
MONITOR> ?  
Command Options:  
  dcc <dev> <dev> Copy first device to second  
  boot <dev> Boot system (dev optional)  
where: <dev> is P|S|T|ST[/0-15]  
  di  f7ff Diagnose system - each bit below  
      0001 Non-destructive local RAM test  
      0002 Usart test  
      0004 Timer test  
      0008 EPROM Checksum test  
      0010 Destructive off-board RAM test  
      0020 Non-destructive off-board RAM test  
      0040 DKI test  
      0080 SBC030 Status Register test  
      0100 Primary Disk test  
      0200 Primary Tape test  
      0400 Primary SCSI test  
      1000 Secondary Disk test  
      2000 Secondary Tape test  
      4000 Secondary SCSI test  
      8000 Destructive local RAM test  
MONITOR>
```

SCREEN 6-8. One-line Entry/Output: Displaying a List of Monitor Mode Commands on an ECPU System

System Responses

Other than the command output that shows a list of monitor mode commands, **help** does not have any associated system responses.

MRC Commands

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MRC Commands

In previous product releases, the maintenance and redundancy function, which supported single and dual Control Computer configurations of Data Networking Products nodes, was made available by the Maintenance and Redundancy Control Module (MRCM). Beginning with the current product release, the Maintenance and Redundancy Control Input/Output (MRCIO) board replaces the existing MRCM for use on a CCM system. The MRCM will be supported in existing configurations with the ECPU system.

Both the MRCIO and MRCM monitor the state of the Control Computer(s) in a node so network operations can continue if a critical component of the active Control Computer fails. Both the MRCIO and MRCM and the function they provide are collectively referred to in all subsequent text as the Maintenance and Redundancy Control (MRC) function.

The MRC function operates in the following modes:

- *Control Computer (CC) connect mode*—In this mode, the console or workstation on port A or B communicates directly with the Control Computer ports through the MRC function, using the Control Computer commands—the monitor, loader, startup, and operations commands.

By escaping from CC connect mode to the MRC command mode, the administrator can access the MRC commands available at the **MRC>** prompt.

- *MRC command mode*—In this mode, a console or workstation on port M (the maintenance port) communicates directly with the MRC function, not the Control Computer. Using the MRC command set, the administrator can access the active or standby Control Computer and manipulate the dual Control Computer configuration.

Not all MRC commands can be entered from a console connected to port A or B when the ports are in MRC command mode; for details, see the command descriptions in this chapter.

MRC Mode Access

The administrator can connect to the MRC function (workstation A) from the active Control Computer. At the active Control Computer **CC0>** prompt, a two-character attention signal preset to `Escape` `Escape`, enables the administrator to toggle from the connect mode to the MRC command mode. While in MRC command mode, which is readily distinguished by the **MRC>** prompt, the administrator connects directly to the port M and communicates with the module via the MRC commands.

The default attention signal, `Escape` `Escape`, can be changed using the **set attention** `<value><value>` command.

Use the attention signal or the MRC **connect** command to change from MRC command mode to CC connect mode, as shown in the following table.

TABLE 7-1. Changing MRC Modes Using the Attention Signal

MRCIO/MRCM Port	Initial Mode	Result After Entering Attention Signal
A or B or M	CC Connect	MRC Command mode
A or B	MRC Command	CC Connect mode (to active CC port A or B)
M	MRC Command	Error message

In the following example, the **connect standby** command is used to connect to the standby Control Computer. The **SC1>** prompt signifies the standby Control Computer. Using the same attention signal once again invokes the MRC command mode. The MRC **connect** command is used to reconnect to the active Control Computer.

```
CC0>    
MRC> connect standby  
SC1>    
MRC> connect  
CC0>
```

SCREEN 7-1. Connecting the MRC

Workstation port A or port B can also enter the MRC command mode using the attention signal if either is configured for command entry with the **set <a/b> command on** commands. However some commands, such as **load** and **diagnose**, can only be issued from port M.

Node administrators can access the MRC function simultaneously from different workstations. The MRC function can issue messages to ports that are in MRC command mode, which lets each administrator know the most recently executed command at each port. These messages are sent if alarms are configured with the **set <a/b> alarm on** commands.

Command Conventions and Entry Method

MRC commands consist of only a verb; a verb/object pair; or a verb/object/parameter trio. All commands are typed in lowercase letters and can be abbreviated by using the first three letters of any component. They are executed by pressing .

Except for the **diagnose** and **load** commands, all commands are input as one-line entries. With **diagnose** and **load**, the system prompts for yes or no responses.

MRC Command Timeout

While in MRC command mode, port A or B reconnects to the active Control Computer if it does not receive terminal input 10 seconds after the attention sequence is entered or 45 seconds after the first character of a command is entered. No timeout exists for port M.

Editing Keys

The following keys are used to edit command lines in the MRC command mode.

TABLE 7-2. MRC Editing Keys

Function	Editing Key
back up to correct a character	Backspace or Control H
erase a character	#
erase a line	@ or Delete

On-line Help

The **help** command displays important information on the MRC commands. Like the operations commands, levels of on-line help are available:

- *First level* — accessed by typing **help**, displays a list of verbs, arguments, and actions.
- *Second level* — accessed by typing **help <verb>** or **? <verb>** gives a detailed explanation of the command.

System Responses

The MRC function outputs various system responses when a command cannot be executed because of an input error. These responses are prefixed with the key phrases **INPUT ERROR** or **WARNING**, similar to the operations commands, and are listed in each command entry.

Because multiple administrators access the MRC command mode from different workstations and activities can interfere with each other, the MRC function outputs advisory messages to ports in the MRC command mode regarding any commands being entered.

connect command set

The **connect** commands enable you to establish a connection between the workstation port to which you are currently connected and a specified Control Computer port. Some connection limitations are

- Regardless of the status (*active* or *standby*) or shelf number (*0* or *1*) of the Control Computer, you can only connect workstation port A to port A of a specified Control Computer, and workstation B port to port B of a specified Control Computer.
- You can only connect port M to port A or B of the Control Computer designated as *active* or to port A of the Control Computer designated as *standby*. (You cannot establish a connection between port M and port B of the Control Computer designated as *standby*.)

Connection of port M to port A or port B of the active Control Computer is referred to as *remote access*. The system warns the administrator that the system console is to be disconnected from the active Control Computer and connected to the MRC function. The disconnected console can communicate directly with the MRC function if the port has been set to *command on*. If the port has been set to *command off*, the console remains in the *disc* (disconnect) state.

If you enter **connect** from port M and specify a Control Computer but not a port, the connection defaults to port A. However, if you enter **connect** from port M and make no other specifications (Control Computer or port), the command does not execute.

- You can only connect one workstation port to one Control Computer port at a time.
- If a Control Computer port is configured for security and you request a connection from port M, you are prompted for a password. When you want to disconnect port M from the Control Computer and reconnect a workstation port, the reconnecting workstation port is prompted. (See the **enter node** operations command.)

TABLE 7-3. MRC Function–Control Computer Port Connections

Workstation Port	Control Computer Specified				
	Active	Standby	0	1	No CC Specified
Workstation A	Port A only	Port A only	Port A only	Port A only	Port A, Active CC
Workstation B	Port B only	Port B only	Port B only	Port B only	Port B, Active CC
Port M	Port A or Port B	Port A only	Port A or Port B if Active CC	Port A or Port B if Active CC	No Connection
			Port A only if Standby CC	Port A only if Standby CC	

connect

If you are currently connected to workstation port A or B, the **connect** command enables you to establish a connection between the port to which you are currently connected and the corresponding port on an active Control Computer without specifying any additional parameters:

- If you are currently connected to the workstation port A, you can be automatically connected to port A on the active Control Computer.
- If you are currently connected to the workstation port B, you can be automatically connected to port B on the active Control Computer.

If you are currently connected to port M, you cannot execute this command. If you attempt to execute this command from port M, the command does not execute, a connection is not made, and the appropriate system responses (error messages) are generated.

The **connect** commands should not be executed from port M while the MRC is in *manual bypass*.

Syntax

You must input **connect** (c) in lowercase letters, as a one-line entry only.

```
MRC> connect
```

Parameters

None.

```
MRC> connect
CC0>
```

SCREEN 7-2. One-line Entry/Output: Successful Connection to Active Control Computer Port From Workstation Port A

```
MRC> connect
connect command failed.
Control computer must be specified for the M port.
MRC>
```

SCREEN 7-3. One-line Entry/Output: Unsuccessful Attempt at Connection From Port M

connect 0

The **connect 0** (*c 0*) command enables you to establish a connection between the workstation port to which you are currently connected and the corresponding port on Control Computer 0 (the Control Computer with the lower shelf number); meaning:

- If you are currently connected to the workstation port A, you can connect to port A on Control Computer 0.
- If you are currently connected to the workstation B port, you can connect to port B on Control Computer 0.
- If you are currently connected to port M, you can connect to port A or port B on Control Computer 0 if it is the active Control Computer and to port A if it is the standby Control Computer.

Syntax

You must input **connect 0** (*c 0*) in lowercase letters only as a one-line entry.

```
MRC> connect 0 <port>
```

Parameters

This section contains explanations of parameters used in the **connect 0** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

port

An optional parameter specifying that the connection is to be made to port *a* or *b* of Control Computer 0.

```
MRC> connect 0
CC0>
```

SCREEN 7-4. One-line Entry/Output: Connecting Port M to Control Computer 0 (Active Status, Optional Port A Not Specified)

```
MRC> connect 0 b
CC0>
```

SCREEN 7-5. One-line Entry/Output: Connecting Workstation Port B to Control Computer 0 (Active Status, Optional Port B Specified)

connect 1

The **connect 1** (*c 1*) command enables you to establish a connection between the workstation port to which you are currently connected and the corresponding port on the Control Computer 1 (the Control Computer with the higher shelf number); meaning:

- If you are currently connected to the workstation port A, you can connect to port A on Control Computer 1.
- If you are currently connected to the workstation B port, you can connect to port B on Control Computer 1.
- If you are currently connected to port M, you can connect to port A or port B on Control Computer 1 if it is the active Control Computer and to port A if it is the standby Control Computer.

Syntax

You must input **connect 1** (**c 1**) in lowercase letters, as one-line entry only.

```
MRC> connect 1 <port>
```

Parameters

This section contains explanations of parameters used in the **connect 1** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

port

An optional parameter specifying that the connection is to be made to port *a* or *b* of Control Computer 1.

```
MRC> connect 1 a
CC1>
```

SCREEN 7-6. One-line Entry/Output: Connecting Port M to Control Computer 1 (Active Status, Optional Port A Specified)

```
MRC> connect 1
CC1>
```

SCREEN 7-7. One-line Entry/Output: Connecting Workstation Port B to Control Computer 1 (Active Status, Optional Port B Not Specified)

connect active

The **connect active** command enables you to establish a connection between the workstation port to which you are currently connected and the corresponding port on the active Control Computer. By specifying a particular port (*<port>*):

- If you are currently connected to workstation port A, you can connect to port A on the active Control Computer.
- If you are currently connected to workstation port B, you can connect to port B on the active Control Computer.
- If you are currently connected to port M, you can connect to port A on the active Control Computer.

Syntax

You must input **connect active** (**c a**) in lowercase letters, as a one-line entry only.

```
MRC> connect active <port>
```

If presently connected to port M:

```
WARNING: Connection of M port to active control computer will result in the  
disconnection of Console <A/B> from the active control computer.  
Continue (y/n):
```

Parameters

This section contains explanations of parameters used in the **connect active** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

port

An optional parameter specifying that the connection is to be made to port *a* or *b* of the active Control Computer. The default is *a* if you are currently on port M; or workstation *a* and *b* if you are currently on the workstation port B.

WARNING: Connection of M port... Continue (y/n):

Specifies whether (*y* for yes or *n* for no) the connection to the active Control Computer should actually be made from port M. Specifying *y* disconnects ports A or B and connects port M; specifying *n* terminates the command before a connection is actually attempted.

```
MRC> connect active
WARNING: Connection of M port to active control computer will result in the
disconnection of Console A from the active control computer.
Continue (y/n): y
CC0>
```

SCREEN 7-8. One-line Entry/Output: Connecting Port M to Active Control Computer (Optional Port A not Specified)

```
MRC> connect active b
WARNING: Connection of M port to active control computer will result in the
disconnection of Console B from the active control computer.
Continue (y/n): n
connect active b command terminated.
By user request.
MRC>
```

SCREEN 7-9. One-line Entry/Output: Trying to Connect Port M to Active Control Computer (Optional Port B Specified)

connect standby

The **connect standby** command enables you to establish a connection between the workstation port to which you are currently connected and the corresponding port on the standby Control Computer; meaning:

- If you are currently connected to the workstation port A, you can connect to port A on the standby Control Computer.
- If you are currently connected to the workstation B port, you can connect to port B on the standby Control Computer.
- If you are currently connected to port M, you can connect to port A on the standby Control Computer. You **cannot** connect to port B on the standby Control Computer.

Syntax

You must input **connect standby (c s)** in lowercase letters, as one-line entry only.

```
MRC> connect standby <port>
```

Parameters

This section contains explanations of parameters used in the **connect standby** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

port

An optional parameter specifying that the connection is to be made to port *a* or *b* of the standby Control Computer.

```
MRC> connect standby  
SC1>
```

SCREEN 7-10. One-line Entry/Output: Connecting Port M to Standby Control Computer (Optional Port A Not Specified)

```
MRC> connect standby b  
SC1>
```

SCREEN 7-11. One-line Entry/Output: Connecting Workstation Port B to Standby Control Computer (Optional Port B Specified)

System Responses

The following responses could be output after entry of one of the **connect** commands.

WARNING: Control computer <0/1> is <booting/failed> or non-existent.

These responses indicate that the specified Control Computer is currently rebooting, failed, or nonexistent (node with a single Control Computer). The connection will still be completed.

WARNING: Connection of M port to active control computer will result in the disconnection of Console <A/B> from the active control computer.

Continue (y/n):

This prompt/response indicates that a **connect** command was issued at port M to connect to port A or port B of the active Control Computer. If *y* (yes) is specified, the connection of the A or B port is dropped and the connection of port M to the active Control Computer port is made. If *n* (no) is specified, the connection to the active Control Computer port is not made and this message is output:

connect active <a/b> command terminated.
By user request.

95:12:31 12:03:45 NODE=Redqueen

nnnn MRC

REPORT COMMAND: INPUT ON PORT M

M Port connected to Active CC <A/B> Port

This response is output to the workstation port that was seized by port M and to any workstation port that is configured for *alarm on* and is connected to the MRC monitor. (*nnnn* is a unique ID; see the *Data Networking Products Messages Reference*.)

NOTE: If the seized workstation port is configured to enter the MRC command mode via an attention signal (*command on*), the **MRC>** prompt appears. If the workstation port is configured for *command off*, the following additional message, which is repeated whenever a character is input at the disconnected workstation port, appears:

This terminal is in disconnect state.

A disconnected port does not receive an MRC prompt; but it continues to receive alarm (but not status) messages if configured for *alarm on*.

System Responses *(continued)*

95:12:31 12:03:45 NODE=Redqueen

nnnn MRC

REPORT COMMAND: INPUT ON PORT M

M Port disconnected from Active CC <A/B> Port

The connection between port M and the active Control Computer port has been dropped. This response is also output to the workstation port that was previously seized by port M regardless if the port was configured to receive alarms. (*nnnn* is a unique ID; see the *Data Networking Products Messages Reference*).

NOTE: After the connection between port M and the Control Computer port is dropped, the seized port—if configured not to enter the MRC command mode via an attention signal (*command off*)—is immediately reconnected to the Control Computer port. If the seized port is configured to enter MRC mode via an attention signal (*command on*), it is reconnected to the Control Computer port when MRC command mode times out or when a **connect** command, specifying the active Control Computer port, is entered at the workstation port.

connect <active/standby> failed.

Port is busy.

The **connect** command, issued from workstation port A or B at the MRC prompt, failed because the requested Control Computer port was already connected to another workstation port. In addition, this response is also output if port M attempted to connect to port A of the standby Control Computer while the standby port was connected to the workstation port A.

connect command failed.

Control computer must be specified for the M port.

The **connect** command was entered from port M without a specified Control Computer.

connect command failed.

M port cannot connect to the standby control computer B port.

The **connect** command was entered at port M to connect to port B of the standby Control Computer. This connection is not allowed. (Refer to the MRC Function/Control Computer Port Connections table.)

connect command failed.

Console A cannot connect to control computer B port.

A **connect** command was entered to connect the workstation port A to port B of the Control Computer. This connection is not allowed. (Refer to the MRC Function/Control Computer Port Connections table.)

System Responses *(continued)*

connect command failed.

Console B cannot connect to control computer A port.

The **connect** command was entered to connect the workstation port B to port A of the Control Computer. This connection is not allowed. (Refer to the MRC Function/Control Computer Port Connectivity table .)

INPUT ERROR: <command verb> is not a command.

Type 'help' for a list of MRC commands.

You did not input the verb portion of the command correctly. Either re-enter the command or type **help** for assistance.

INPUT ERROR: <command verb> has missing or incorrect arguments.

Type 'help <command verb>' for help.

You did not input the parameter (arguments) or parameter option (value) portion of the command correctly. Either re-enter the command or type **help <command verb>** for assistance.

diagnose command set

The **diagnose** commands enable you to test the MRC hardware and ports. Running the **diagnose internal** or **diagnose io** command temporarily suspends high availability and/or remote access. This command can only be run on port M.

Verb	Related Objects
diagnose	internal io

diagnose internal

This section describes interactions with the MRCM or MRCIO boards. For brevity in the descriptions, *MRC* is used to indicate MRCM or MRCIO, whichever hardware is present in your node. Labels and prompts for MRCM boards are *MRCM*; for MRCIO boards, *MRC*.

The **diagnose internal** command enables you to test the MRC hardware by rerunning boot diagnostics. Before the **diagnose internal** command can be executed, you must currently be on port M.

NOTE: If you execute the **diagnose internal**, **diagnose io**, or **load** command from a remote location (via port M), you may be disconnected.

Syntax

You must input **diagnose internal** (**dia in**) in lowercase letters, as a one-line entry only.

```
MRC> diagnose internal
```

```
WARNING: Running "diagnose internal" prevents the MRC from monitoring  
control computers. Continue (y/n):
```

If running diagnostic is to continue:

```
Loop continuously (y/n):
```

```
Loop on error (y/n):
```

Parameters

This section contains explanations of parameters used in the **diagnose internal** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

Loop continuously (y/n):

Specifies whether the diagnostic should perform continuous testing. If you respond *n* (for no), diagnostics are run once. If you respond *y* (for yes), testing continues until you press any key after execution of the WATCHDOG test for MRCM or the BADARR test for MRCIO.

Loop on error (y/n):

Specifies whether the diagnostic should loop when an error is detected. If you respond *n* (for no), the system prints a message if an error occurs and testing continues. If you respond *y* (for yes), testing stops when an error occurs.

WARNING: Running "diagnose internal"...Continue (y/n):

Specifies whether the command should continue to execute even though Control Computer monitoring will temporarily be suspended. If you respond *n* (for no), the command terminates. If you respond *y* (for yes), additional prompting occurs.

```
MRC> diagnose internal

WARNING: Running "diagnose internal" prevents the MRC from monitoring
control computers. Continue (y/n): y

Loop continuously (y/n): n
Loop on error (y/n): n

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M diagnose internal

Resetting. Please wait.

*** MRC Loader <Release>***
    Copyright <year> Lucent Technologies
    All Rights Reserved

    Built on:
* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*

<Test Name>    <PASSED/FAILED>
.
.
.

*** MRC Monitor <code> Build <number> ***
    Copyright <year> Lucent Technologies
    All Rights Reserved

    Built on:
* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*

MRC>
```

SCREEN 7-12. One-line Entry/Output: Rerunning MRC Boot Diagnostics to Check Hardware

diagnose io

This section describes interactions with the MRCM or MRCIO boards. For brevity in the descriptions, *MRC* is used to indicate MRCM or MRCIO, whichever hardware is present in your node. Labels and prompts for MRCM boards are *MRCM*; for MRCIO boards, *MRC*.

The **diagnose io** command enables you to run diagnostics on the MRC ports. Before the **diagnose io** command can be executed, you must currently be on port M, the standby Control Computer must be removed (**remove standby**), and the automatic recovery feature must be off (**set recovery off**). In addition, loopback devices must be connected to the ports. For the MRCIO, both Control Computers must be at the **MONITOR>** prompt; the controller mode switch must be in the DIAG position; port A must be set to 9600 baud; and port B must be set to 1200 baud.

NOTE: If you execute the **diagnose internal**, **diagnose io**, or **load** command from a remote location (via port M), you may be disconnected.

Syntax

You must input **diagnose io** (**dia io**) in lowercase letters, as a one-line entry only. For example, for the MRCM the syntax is the following:

```
MRC> diagnose io
```

```
Are loopback devices attached to MRC control computer ports (y/n):
```

```
Loop continuously (y/n):
```

```
Loop on error (y/n):
```

Parameters

This section contains explanations of parameters used in the **diagnose io** prompting sequence. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

Are loop back ... (y/n):

Specifies whether loopback devices are attached to the Control Computer ports. If you respond *n* (for no), the command is terminated. If you respond *y* (for yes), additional prompting occurs.

Loop continuously (y/n):

Specifies whether the diagnostic should perform continuous testing. If you respond *n* (for no), diagnostics are run once. If you respond *y* (for yes), testing continues until you press . After is pressed, one full set of tests runs to completion and then testing stops.

Loop on error (y/n):

Specifies whether the diagnostic should loop when an error is detected. If you respond *n* (for no), the system prints a message if an error occurs and testing continues. If you respond *y* (for yes), testing stops when an error occurs.

```

MRC> diagnose io
Duplex configuration
Tape device not present

Are controllers in MONITOR mode with their mode switch at DIAG, and
have they been reseated so that controller port A is 9600 baud and
controller port B is 1200 baud.

Are loop back devices attached to MRC workstation ports A and B (y/n): y
Loop continuously (y/n): n
Loop on error (y/n): n
  <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  diagnose io

                                MRC IO DIAGNOSTICS

<Test Name>  <PASSED/FAILED>
.
.
.
.
diagnose io complete. Reattach original cables and hit any key to continue.
Resetting. Please wait.

*** MRC Loader <Release>***
  Copyright <year> Lucent Technologies
  All Rights Reserved

  Built on:

*  <Day> <Month> <Date> <hh:mm:ss> EDT <year>*

<Test Name>  <PASSED/FAILED>
.
.
.
.
MRC>

```

SCREEN 7-13. One-line Entry/Output: Running Diagnostics on MRC Ports*

* Recovery is set to off; the standby Control Computer is removed from MRC function control.

System Responses

The following responses could be output after entry of the **diagnose** commands.

diagnose <object> command failed.

Command can be executed only from the M port.

The **diagnose io** or **diagnose internal** command can only be executed if you are connected to port M. You are connected to the workstation port A or B.

diagnose <object> command terminated.

By user request.

The **diagnose internal** command terminated because you responded *no* to the warning:

Running 'diagnose internal' prevents the MRC from monitoring control computers. Continue (y/n):

The **diagnose io** command terminated because you responded *no* to the prompt: **Are loop back devices attached to MRC control computer ports.**

FAILED - CODE NNN - SUSPECT DEVICE ICXXX or ICYYY

NNN is a failure code, and XXX or YYY is the suspected failed component. One of the diagnostics for a particular port failed which indicates a hardware malfunction.

INPUT ERROR: <command verb> is not a command.

Type 'help' for a list of MRC commands.

You did not input the verb portion of the command correctly. Either re-enter the command or type **help** for assistance.

INPUT ERROR: Enter 'y' for yes or 'n' for no.

The system prompted you for a *y* or *n* response and you typed something such as *yes* or *no*, or an invalid string.

Looping on error. Hit any key to continue.

During execution of the **diagnose io** command, an error was encountered during loop on error. Press any key to continue testing.

MRC failure.

Reset or replace TN2109 or CTS1 module.

The **diagnose internal** command has indicated that the MRC function must be reset or replaced. The red LED on the module stays lit and the module remains in loader mode until a reset or replacement occur.

Waiting for reset. Hit any key to stop loop continuous.

During execution of the **diagnose internal** command, a *y* was entered in response to the **Loop continuously** prompt. Any key pressed before a reset occurs, stops the continuous looping process.

display command set

The output of the **display** commands enables you to check information relevant to the MRC function, such as its current time, its parameter specifications, its last diagnostic failure, the Control Computer status, and the switchover history.

Verb	Related Objects
display	diagnostic status time

display diagnostic

The output of the **display diagnostic** command enables you to determine the last diagnostic failure recorded for the MRC function during execution of **diagnose internal**.

Syntax

You must input **display diagnostic** (**dis dia**) in lowercase letters, as a one-line entry only.

```
MRC> display diagnostic
```

Parameters

None.

```
MRC> display diagnostic
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  display diagnostic

                                LAST DIAGNOSTIC FAILURE

<Test Name>    <PASSED/FAILED> <Reason>
MRC>
```

SCREEN 7-14. One-line Entry/Output: Displaying Last Diagnostic Message Output

display status

The output of the **display status** (or **dstat**) command enables you to verify important MRC options such as module address, attention signal, port parameter settings, alarm information, and recovery information. The output indicates which Control Computer is active and which is standby. This output should be checked against the active state of each Control Computer by connecting to that Control Computer and checking whether it is active or standby. Whenever a CTS1 is to be replaced, refer to the appropriate *Node Reference* for procedures that explain the replacement steps and how to check for two active Control Computers.

Syntax

You must input **display status** (**dis st** or **dstat**) in lowercase letters, as a one-line entry only.

```
MRC> display status
```

Parameters

None.

```
MRC> display status

<yy-mm-dd> <hh:mm:ss> NODE=<name>
M display status
MRC SOFTWARE: RELEASE=<code> BUILD=<number>
NAME=Redqueen MRC ADDRESS=7 ATTENTION=<esc><esc> RECOVERY=off
ALARM AAU BAUD COMMAND CONNECT PASSWORD
MRC PORT A: off off 9600 on sta
MRC PORT B: on off 9600 off disc
MRC PORT M: on off 2400 on actb <private>

LAST ALARM: <yy-mm-dd> <hh:mm:ss> active cc 1 failed (0001)
CONTROL COMPUTER 0: active, booting
CONTROL COMPUTER 1: standby, out-of-srvc

* * * * RECOVERY HISTORY * * * *
<yy-mm-dd> <hh:mm:ss> CC 0 to CC ? CAUSE: cc0 reset
<yy-mm-dd> <hh:mm:ss> CC 0 to CC 1 CAUSE: switchover cmd
<yy-mm-dd> <hh:mm:ss> CC 1 to CC 0 CAUSE: cc1 reset
<yy-mm-dd> <hh:mm:ss> CC 1 to CC X CAUSE: cc1 init cmd ;cc0 failed
<yy-mm-dd> <hh:mm:ss> CC 0 to CC 1 CAUSE: cc0 reset
MRC>
```

SCREEN 7-15. One-line Entry/Output: Displaying MRC Function Status

Report Fields

ATTENTION

The *attention signal* used to toggle between MRC command mode and Control Computer connect mode. Control characters are represented by a caret prefixing the character, ^; the escape key is represented as <esc>.

Report Fields (*continued*)**MRC ADDRESS**

The slot number the MRC function occupies on the node shelf.

MRC PORT <A/B/M>

Specific information regarding the MRC workstation ports *A*, *B*, or *M*:

AAU	Indicates if the MRC function is to output signals to the <i>alarm activator unit</i> attached to the workstation port. If <i>on</i> , signals are output; if <i>off</i> , signals are not output. For port <i>M</i> , this field always reads <i>off</i> .
ALARM	Indicates if alarm output to the workstation port is turned <i>on</i> or <i>off</i> . For port <i>M</i> , this field always reads <i>on</i> .
BAUD	The data transmission speed to which the workstation port is set.
COMMAND	Indicates if the workstation port can enter MRC command mode via entry of an attention signal. If <i>on</i> , the attention signal—when entered at the workstation port—can enable entry into the MRC command mode. For port <i>M</i> , this field always reads <i>on</i> .
CONNECT	The <i>connection</i> status of the workstation port <i>A</i> or <i>B</i> port to be <i>mrcm</i> if the port is in MRC command mode; <i>act</i> if the port is connected to the active Control Computer; <i>sta</i> if the port is connected to the standby Control Computer; or <i>disc</i> if the port is disconnected. For port <i>M</i> , the same definitions apply except <i>actb</i> indicates the port is connected to the <i>B</i> port of the active Control Computer and <i>disc</i> (disconnected) is not valid.
CONTROL COMPUTER <0/1>	The status of the Control Computer designated as <i>0</i> or <i>1</i> to be <i>active</i> or <i>standby</i> and whether it is currently <i>in-service</i> ; <i>booting</i> or <i>failed</i> for the active Control Computer; or <i>in-service</i> ; <i>booting</i> ; <i>out-of-srv</i> ; <i>out-of-srv</i> , <i>failed</i> ; or <i>failed</i> for the standby Control Computer.
LAST ALARM	The date and time of the last MRC alarm. These are followed by explanatory text and the alarm ID number. If an alarm has not occurred since the MRC function was reset, the output reads: <i>No alarm</i> .
MRC SOFTWARE	The <i>software release</i> and the <i>build number</i> of the firmware currently running on the MRC function.
NAME	The name of the local node.

Report Fields *(continued)*

RECOVERY Indicates if the MRC function is set (*on* or *off*) to have the active Control Computer automatically *recover* from potential system problems and actual system failures.

RECOVERY HISTORY

The MRC function recovery history.

- The first field shows the date and time of the attempted recovery.
- The second field shows the numbers assigned to the active Control Computer before and after the attempted recovery. The same number appears on either side of the *to* if a switchover to the standby Control Computer did not occur when the active Control Computer was reset or the node only had one Control Computer. If a recovery did not occur and the active Control Computer failed, an *X* replaces the number in the second portion of the field. If a recovery attempt is in progress, the field contains a *?*.
- The third field shows the cause. The first portion of this field gives the initial reason for the recovery attempt. If a switchover did occur (the recovery was not successful), an additional reason is given in the second portion of this field.

Possible initial causes are

cc <0/1> reset
cc <0/1> init cmd
switchover cmd
cc <0/1> failed
mrc reset
cc recovered

Possible second causes are

recovery off
cc <0/1> out-of-srv
cc <0/1> failed

display time

The output of the **display time** command enables you to verify the current time and date known to the MRC function. To reset the time known to the MRC function, refer to the **set time** command.

Syntax

You must input **display time (dis t)** in lowercase letters, as a one-line entry only.

```
MRC> display time
```

Parameters

None.

```
MRC> display time
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  display time
MRC>
```

SCREEN 7-16. One-line Entry/Output: Displaying Time

System Responses

The following responses could be output after entry of the **display** commands.

INPUT ERROR: <command verb> is not a command.

Type 'help' for a list of MRC commands.

You did not input the verb portion of the command correctly. Either re-enter the command or type **help** for assistance.

No diagnostic failure

The output of **display diagnostic** has shown that a diagnostic failure was not recorded since the MRC function was installed or its firmware was downloaded.

help (?) command set

The **help** command, along with its objects, enables you display on-line information showing the minimum entry abbreviations, parameters/arguments, and function of the MRC command objects. Informative administrative *notes* are also included.

Syntax

You must input **help** in lowercase letters, as a one-line entry only. Instead of typing the word *help*, you can also use a question mark: ?

```
MRC> help <object>
```

- or -

```
MRC> ? <object>
```

Objects

This section contains explanations of objects used in conjunction with **help**. Refer to each command verb for any appropriate parameters (arguments).

connect

Displays optional information regarding the **connect** commands.

diagnose

Displays optional information regarding the **diagnose** commands.

display

Displays optional information regarding the **display** commands.

initialize

Displays optional information regarding the **initialize** commands.

load

Displays optional information regarding the **load** command.

remove

Displays optional information regarding the **remove** command.

restore

Displays optional information regarding the **restore** command.

retire

Displays optional information regarding the **retire** command.

set

Displays optional information regarding the **set** commands.

switchover

Displays optional information regarding the **switchover** command.


```

MRC> help
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  help
MRC CMD      ARGUMENTS      ACTION
connect      0, 1, active, standby  Connect to control computer
diagnose      internal, io          Test MRC hardware, ports
display      diagnostic, status, time Display information
help          <command>             Information on command
initialize    0, 1, active, standby  Reboot control computer
load          standby               Load program into the MRC
remove        standby               Prevent standby from switchover
restore       standby               Enable standby switchover
retire        alarm                 Turn off alarm
switchover    Make standby control computer active
set           "on" or "off"
              "on" or "off"
              MRC module address
              2 characters for attention signal
              a/b aau, a/b alarm
              a/b command
              address
              attention
              a/b/m baud
              name
              m password
              recovery
              time
              HH:MM YY/MM/DD
FOR MORE HELP: help <command> or ? <command>
MRC>

```

SCREEN 7-17. One-line Entry/Output: Displaying On-line Help for MRC Commands

```

MRC> help connect
      <yy-mm-dd> <hh:mm:ss> NODE=<name>
M  help    connect

CONNECT commands connect a workstation to a control computer.

COMMAND          ABBREVIATIONS          ACTION
FROM A OR B PORTS
connect          c          connects to active control computer
connect 0        c 0        connects to control computer 0
connect 1        c 1        connects to control computer 1
connect active   c a        connects to active control computer
connect standby  c s        connects to standby control computer
FROM M PORT
connect 0 a      c 0 a      connects to control computer 0 A port
connect 0 b      c 0 b      connects to control computer 0 B port
connect 1 a      c 1 a      connects to control computer 1 A port
connect 1 b      c 1 b      connects to control computer 1 B port
connect active a c a a      connects to active control computer A port
connect active b c a b      connects to active control computer B port
connect standby a c s a      connects to standby control computer A port
NOTE: For an M port connection a control computer must be specified. If a
      port is not specified, the M port connection is to an A port. An M
      port connection to a standby B port is not possible.

MRC>

```

SCREEN 7-18. One-line Entry/Output: Displaying On-line Help for connect Command

System Responses

The following response could be output after entry of the **help** command.

INPUT ERROR: <command verb> has missing or incorrect arguments.
Type 'help <command verb>' for help.

You did not input the parameter (arguments) or parameter option (value) portion of the command correctly. Either re-enter the command or type **help <command verb>** for assistance.

initialize command set

The **initialize** commands enable you to reset the hardware of the Control Computer designated as 0, 1, active, or standby.

Verb	Related Objects
initialize	0 1 active standby

initialize 0

The **initialize 0** command enables you to reset the hardware of the Control Computer residing in shelf 0. If the **initialize** command is entered from the workstation port A or B, the MRC function attempts to connect to the active Control Computer. For example, if **initialize 0** is entered from workstation A and Control Computer 0 is currently the active Control Computer, the workstation is automatically connected back to the active Control Computer if port M is not connected to port A of the active Control Computer.

Syntax

You must input **initialize 0 (i 0)** in lowercase letters, as a one-line entry only.

```
MRC> initialize 0
```

Parameters

None.

```
MRC> initialize 0  
MRC>
```

SCREEN 7-19. One-line Entry: Initializing Control Computer 0

initialize 1

The **initialize 1** command enables you to reset the hardware of the Control Computer designated as *1*. If the **initialize** command is entered from the workstation port A or B, the MRC function attempts to connect to the active Control Computer. For example, if **initialize 1** is entered from workstation A and Control Computer 1 is currently the active Control Computer, the workstation is automatically connected back to the active Control Computer if port M is not connected to port A of the active Control Computer.

Syntax

You must input **initialize 1 (i 1)** in lowercase letters, as a one-line entry only.

```
MRC> initialize 1
```

Parameters

None.

```
MRC> initialize 1
MRC>
```

SCREEN 7-20. One-line Entry: Initializing Control Computer 1

initialize active

The **initialize active** command enables you to reset the hardware of the Control Computer designated as *active*. If the **initialize** command is entered from the workstation port A or B, the MRC function attempts to connect to the active Control Computer. For example, if **initialize active** is entered from workstation A, the workstation is automatically connected back to the active Control Computer if port M is not connected to port A of the active Control Computer.

NOTE: Initializing the active Control Computer can result in an attempted switchover to the standby Control Computer if recovery is set to *on*.

Syntax

You must input **initialize active (i a)** in lowercase letters, as a one-line entry only.

```
MRC> initialize active
```

Parameters

None.

```
MRC> initialize active
MRC>
```

SCREEN 7-21. One-line Entry: Initializing Active Control Computer

initialize standby

The **initialize standby** command enables you to reset the hardware of the standby Control Computer.

Syntax

You must input **initialize standby (i s)** in lowercase letters, as a one-line entry only.

```
MRC> initialize standby
```

Parameters

None.

```
MRC> initialize standby
MRC>
```

SCREEN 7-22. One-line Entry: Initializing Standby Control Computer

System Responses

The following responses could be output after entry of one of the **initialize** commands.

initialize <object> command failed.

A recovery is in progress.

The **initialize** command cannot be executed because a recovery of the specified Control Computer is occurring.

INPUT ERROR: <command verb> is not a command.

Type 'help' for a list of MRC commands.

You did not input the verb portion of the command correctly. Either re-enter the command or type **help** for assistance.

load command set

The **load** command, which can only be executed from port M, enables you to download a file from the specified Control Computer to the MRC's nonvolatile memory. This file contains a new version of MRC firmware.

load

For a node with a redundant Control Computer, the typical procedure is to load the MRC firmware from the file system of the standby Control Computer. The standby Control Computer must be removed from MRC function control and recovery set to *off* to prevent an attempt at automatic recovery.

For a node with a single Control Computer, the MRC firmware is loaded from the file system of the active Control Computer. Recovery must be set to *off* to prevent an attempt at automatic recovery. Call processing continues on the Control Computer.

Like the **diagnose internal** and **diagnose io** commands, if you execute **load** from a remote location (via port M), you will be disconnected.

For either Control Computer configuration, the suggested baud for a download is 9600 bps. Every 10 seconds, the MRC function appends greater than symbols (>) to the **INFO: Load proceeding** message as an indication that the download is in progress. At 9600 baud, the download takes about four minutes.

WARNING: During the download, the workstation ports A and B are disabled.

During the download, internal diagnostics are run twice. The failure of the EEPROM test during the first iteration of the internal diagnostic is expected. The second iteration of the test—after the software has been downloaded—proves a successful test of the EEPROM.

WARNING: If a valid file cannot be downloaded to the MRC function during execution of the **load** command, the MRC function cannot perform any Control Computer management functions. The MRC workstation port connections to the Control Computer(s) are disabled. To regain connection to the active Control Computer, pull the MRC board in order to trigger relays that connect the workstation port to the active Control Computer.

In addition, before executing the **load** command, take note of all MRC parameters settings (use **display status**) because these settings revert to the default values after the load is completed.

Syntax

You must input **load** (**l**) in lowercase letters, as a one-line entry, only from port M. Prior to executing **load** at the MRC prompt, you should be in the Control Computer directory containing the file to be downloaded. Once in the correct directory, you can enter the attention signal to get into MRC command mode.

Syntax (*continued*)

```

MRC> load
First advisory message/prompt:
WARNING: Program file to be loaded must be in a directory on a control computer.
Continue load removes the current program in the MRC.
Continue (y/n):

If response to first advisory message/prompt is yes:
Resetting, please wait.
. . .
From control computer [0, 1, a, s: +(s)]:

If response to first advisory message/prompt was yes and Control Computer has been specified:
Control computer must be in the directory containing the MRC program file.
Use <ESC><ESC> to toggle between the MRC monitor and the control computer.
Continue (y/n):

If response to second advisory message/prompt is yes:
Program file name:

```

Parameters

This section contains explanations of parameters used with **load**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

Control computer must be in the directory... Continue (y/n):

Specifies whether (y for yes or n for no) the download should continue. A y response to this second advisory message indicates that the file containing the updated firmware does reside in the Control Computer directory previously entered and that file can overwrite the existing MRC firmware. An n response reruns the load program. (At this point, the MRC firmware must be downloaded; the MRC function remains in loader mode until a successful download occurs. However, you can still use the attention signal, which is , to check the existence of the file.)

From control computer

Specifies whether the software to be downloaded resides on the Control Computer designated as 0, 1, a (for active), or s (for standby, the default).

Program file name

A string of alphanumeric characters specifying the name of the file that contains the updated MRC firmware (for example, *mrcm*).

WARNING: Program file... Continue (y/n):

Specifies whether (y for yes or n for no) the download should continue. A y response to this first advisory message/prompt indicates that the file containing the updated firmware does reside in the Control Computer directory previously entered and that file can overwrite the existing MRC firmware. An n response aborts the download.

load

```
MRC> remove standby
MRC> set recovery off
MRC> connect standby
SC0> stop
LOADER> r dkc6
UTILITY> cd /download
UTILITY> ls <mrcio/mrcm>
<mrcio/mrcm>
UTILITY>  
MRC> load
WARNING: Program file to be loaded must be in a directory on a control computer.
Continuing load removes the current program in the MRC.
Continue (y/n): y
Resetting. Please wait.
*** MRC Loader <Release>***
  Copyright <year> Lucent Technologies
  All Rights Reserved
    Built on:
* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*
<Test Name>  <PASSED/FAILED>
.
.
.
.
MRC Loader
INFO: 0 = CC0, 1 = CC1, a = active CC, s = standby CC
From control computer [0, 1, a, s: +(s)]: +
Control computer must be in the directory containing the MRC program file.
Use <ESC><ESC> to toggle between the MRC monitor and the control computer.
Continue (y/n): y
Program file name: <mrcio/mrcm>
INFO: Load proceeding > > > > > > > > > > > > > > > > > >
INFO: Load complete, performing upgrade.
INFO: Upgrade complete, waiting for reset.
```

SCREEN 7-23. One-line Entry/Output: Downloading Firmware from Standby Control Computer*

* The entire prompting/command entry sequence is shown including file existence checking.

One-line Entry/Output: Downloading Firmware from Standby Control Computer *(continued)*

```

*** MRC Loader <Release>***
  Copyright <year> Lucent Technologies
  All Rights Reserved

  Built on:
* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*
<Test Name> <PASSED/FAILED>
.
.
.

*** MRC Monitor <code> Build <number> ***
  Copyright <year> Lucent Technologies
  All Rights Reserved

  Built on:
* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*

MRC> initialize standby
MRC>

```

```

MRC> set recovery off
MRC> connect active
WARNING: Connection of M port to active controller will result in the
disconnection of Console A from the active control computer.
Continue (y/n): y
CC0> stop
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type 'help' or '?' for help

```

SCREEN 7-24. One-line Entry/Output: Downloading Firmware from Active Control Computer*

* The entire prompting/command entry sequence is shown including file existence checking.

One-line Entry/Output: Downloading Firmware from Active Control Computer *(continued)*

```

LOADER> run
Active CC
Loading text
Loading data
Clearing bss

  Booted from Device: 5/0
  Local Memory Size = <number>
  RAM 0 Memory Size = <number>
  Available Memory: <number> End of Supervisor: <number>

Option                                Description
<return>                             /etc/config, the default
sh                                    /bin/mini_sh, an interactive shell
fsck <options> <file system>          defaults to checking root
{cmd} [arg ...]                       execute "cmd" with optional arguments.

-tty preceding a command leaves the console closed. This is required
if you are going to run an alternate "config" or "mini_sh".

<STARTUP> $ sh
MINI-SH: What can I do for you?
UTILITY> cd /download
UTILITY> ls <mrcio/mrcm>
<mrcio/mrcm>
UTILITY>  
MRC> load
WARNING: Program file to be loaded must be in a directory on a control computer.
Continuing load removes the current program in the MRC.
Continue (y/n): y
Resetting, please wait.

*** MRC Loader <Release>***
  Copyright <year> Lucent Technologies
  All Rights Reserved

  Built on:

* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*

<Test Name> <PASSED/FAILED>

.
.
.

MRC Loader

INFO: 0 = CC0, 1 = CC1, a = active CC, s = standby CC
From control computer [0, 1, a, s: +(s)]: a

```

One-line Entry/Output: Downloading Firmware from Active Control Computer *(continued)*

Control computer must be in the directory containing the MRC program file.
Use <ESC><ESC> to toggle between the MRC monitor and the control computer.

Continue (y/n): y

Program file name: <mrcio/mrcm>

INFO: Load proceeding >

INFO: Load complete, performing upgrade.

INFO: Upgrade complete, waiting for reset.

*** MRC Loader <Release>***

Copyright <year> Lucent Technologies

All Rights Reserved

Built on:

* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*

<Test Name> <PASSED/FAILED>

```

.
.
.
.
.

```

*** MRC Monitor <code> Build <number> ***

Copyright <year> Lucent Technologies

All Rights Reserved

Built on:

* <Day> <Month> <Date> <hh:mm:ss> EDT <year>*

MRC> initialize active

MRC>

System Responses

The following responses could be output after entry of the **load** command.

INFO: Load proceeding > > > >

The download is occurring. Once every 10 seconds, the MRC function displays a > to indicate load execution is progressing.

INFO: Load complete, performing upgrade.

The download is finished and the firmware upgrade is now in progress.

INFO: Upgrade complete, waiting for reset.

The firmware upgrade is finished and the MRC function is being reset.

INPUT ERROR: <command verb> is not a command.

Type 'help' for a list of MRC commands.

You did not input the verb portion of the command correctly. Either re-enter the command or type <help> for assistance.

INPUT ERROR: Incorrect control computer specification.

You entered the incorrect characters at the **From control computer** prompt. You can only specify the characters *a*, *s*, *0*, *1*, or *+*.

INPUT ERROR: Enter 'y' for yes or 'n' for no.

The system prompted you for a *y* or a *n* response and you typed something else such as *yes* or *no*, or an invalid string.

load command failed.

Command can only be executed from the M port.

You tried to execute the **load** command from the workstation A or B port.

load command terminated.

By user request.

You responded *n* to the message/prompt that cautioned **WARNING: Program file to be loaded must be in... Continue (y/n)**. The download was aborted.

Load command failed.

Bad file.

The **load** command could not execute and the download was aborted because the file does not exist. **Load command failed. Checksum error.**

The **load** command could not execute and the download was aborted because the checksum received from the file was wrong.

System Responses *(continued)***Load command failed. Data error.**

The **load** command could not execute and the download was aborted because an error was detected in the data.

Load command failed.**CRC 16 error on file, value is nnnn.**

The **load** command could not execute and the download was aborted because a discrepancy occurred on the file being downloaded.

Load command failed.**Requested file was not received.**

The **load** command could not execute and the download was aborted because the file specified in the **Program file name** prompt could not be downloaded.

Waiting for reset.

The MRCM on the ECPU system is waiting for the Watchdog Timer to reset the board.

remove and restore command set

The **remove** and **restore** commands enable you to take the standby Control Computer out of MRC function control and to put it back under MRC function control, respectively. This information is stored in nonvolatile memory.

Verbs	Related Objects
remove	standby
restore	standby

remove standby

The **remove standby** command enables you to take a standby Control Computer out of MRC function control. Once removed from MRC function control, the Control Computer is designated as *out-of-srvc* or *out-of-srvc, failed* on MRC reports and it cannot be reset or switched to active Control Computer status automatically. Since only the standby Control Computer can be removed, the object **standby** does not have to be specified during command entry. In a single Control Computer environment, **remove standby** must be issued to prevent the MRC function from switching over, either manually or automatically, to a nonexistent Control Computer.

If the command is entered correctly, the system does not issue any response other than the **MRC>** prompt. If the standby Control Computer was removed or restored prior to the execution of this command, the MRC function ignores your request and outputs a new line followed by the **MRC>** prompt.

Syntax

You must input **remove (rem)** or **remove standby (rem s)** in lowercase letters, as a one-line entry only.

```
MRC> remove
```

- or -

```
MRC> remove standby
```

Parameters

None.

```
MRC> remove standby
MRC>
```

SCREEN 7-25. One-line Entry: Removing Standby Control Computer

restore standby

The **restore standby** command enables you to put a standby Control Computer, which had previously been removed, back into MRC control. Once restored to MRC control, it can be reset or switched to active Control Computer status automatically. Since only the standby Control Computer can be restored, the object *standby* does not have to be specified during command entry.

If the command is entered correctly, the system does not issue any response other than the **MRC>** prompt. If the standby Control Computer was removed or restored prior to the execution of this command, the MRC function ignores your request and outputs a new line followed by the **MRC>** prompt.

Syntax

You must input **restore (res)** or **restore standby (res s)** in lowercase letters, as a one-line entry only.

```
MRC> restore
```

- or -

```
MRC> restore standby
```

Parameters

None.

```
MRC> restore standby
MRC>
```

SCREEN 7-26. One-line Entry: Restoring Standby Control Computer

System Responses

The following responses could be output after entry of the **remove** or **restore** commands.

INPUT ERROR: <command verb> is not a command. Type 'help' for a list of MRC commands.

You did not input the verb portion of the command correctly. Either re-enter the command or type **help** for assistance.

remove standby failed. A recovery is in progress.

A recovery of the standby Control Computer is currently taking place.

retire command set

The **retire** command enables you to retire the alarm being generated by the alarm activator unit (aaU).

retire alarm

The **retire alarm** command enables you to retire the alarm being generated by the Alarm Relay Unit (ARU), designated *aaU* (for alarm activator unit) in the software. This command only affects ports configured for *aaU on*.

Since only alarms can be retired, the object **alarm** does not have to be specified during command entry. If the command is entered correctly, the system does not issue any response other than the **MRC>** prompt.

Syntax

You can input **retire (ret)** or **retire alarm (ret a)** in lowercase letters, as a one-line entry only.

```
MRC> retire
- or -
MRC> retire alarm
```

Parameters

None.



```
MRC> retire alarm
```

SCREEN 7-27. One-line Entry: Retiring Alarms

System Responses

The following response could be output after entry of **retire alarm**.

INPUT ERROR: <command verb> is not a command.

Type 'help' for a list of MRC commands.

This response indicates that you did not input the verb portion of the command correctly. Either re-enter the command or type **help** for assistance.

set command set

The **set** command set enable you to make the initial specifications regarding the module attention signal, date and time, and address. The **set** commands let you change the initial configuration settings for the MRC workstation ports including the baud rate, alarm activation, alarm/status displays, and command mode entry. This information is stored in nonvolatile memory. In addition, this same command family lets you set the automatic recovery feature.

Verb	Objects	Related Objects
set	a	change node enter node
	address	display status
	attention b m m password	
	name	enter node verify node
	recovery	remove standby
	time	display time

set a

The **set a** command enables you to specify options for the workstation A port regarding signal output from alarm activator unit (aau), displays of alarms and status messages, data transmission rate, and accessing the command mode.

If the command is entered correctly, the system generates a status message. If the A port was previously set to the parameter option specified, the MRC function ignores your request and outputs a new line followed by the **MRC>** prompt.

Syntax

You must input **set a** (**se a**) in lowercase letters, as a one-line entry only.

```
MRC> set a <parameter> <option>
```

Parameters

This section contains explanations of parameters used with **set a**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

aau

Specifies if MRC function should output signals to the *alarm activator unit* attached to the workstation A port. If set to *on*, signals are output; if set to *off*, they are not output.

alarm

Specifies if MRC-generated alarms and status messages should be output to the workstation A port. If set to *on*, the default, alarms and messages are output; if set to *off*, they are not output.

NOTE: (Alarms are output to the workstations when *alarm* is *on*; status messages are output to the workstation when *alarm* is *on* and the workstation is in the MRC command mode.)

baud

Specifies if the workstation A port data transmission rate should be set to 300, 1200, 2400, 4800, 9600, or 19200 bits per second. The workstation A port is initially set to 9600 to match the default setting for the Control Computer A port. (The baud rate setting for the workstation A port specified via the MRC **set a baud** command should match the baud rate setting for port A specified via the **enter node** or **change node** command. If the setting matches, it does not have to be changed.)

command

Specifies if the workstation A port can enter the MRC command mode via entry of an attention signal. If *on*, the default, the port can access MRC command mode via an attention signal; if *off*, the port cannot access MRC command mode via an attention signal.

set a

```
MRC> set a aau on
MRC>
```

SCREEN 7-28. One-line Entry: Setting Alarm Activator Unit for Port A

```
MRC> set a alarm on
MRC>
```

SCREEN 7-29. One-line Entry: Setting Alarms to be Output to Port A

```
MRC> set a baud 19200
MRC>
```

SCREEN 7-30. One-line Entry: Setting 19200 bps Baud Rate for Port A

```
MRC> set a command on
MRC>
```

SCREEN 7-31. One-line Entry: Setting Command Mode for Port A

set address

The **set address** command enables you to specify the address of the MRC function on the node shelf. This address is only used to identify the MRC's physical location on the output of the **display status** command—it is not related to the information stored in the node database. This information is stored in nonvolatile memory.

Syntax

You must input **set address (se ad)** in lowercase letters, as a one-line entry only.

```
MRC> set address <number>
```

Parameters

This section contains explanations of parameters used with **set address**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

number

A number from 0 to 99 specifying the node slot number which the MRC function occupies.

```
MRC> set address 7
MRC>
```

SCREEN 7-32. One-line Entry: Specifying Node Slot (Address) of the MRC Function

set attention

The **set attention** command enables you to specify an attention signal to be used to toggle between the MRC command mode and the Control Computer connect mode. This two-character signal toggles the port from the Control Computer connect mode (in which the port talks directly to the computer port it is connected to) and the MRC command mode (in which it talks to the MRC function). This information is stored in nonvolatile memory.

Syntax

You must input **set attention** (**se at**) in lowercase letters, as a one-line entry only.

```
MRC> set attention <character><character>
```

Parameters

This section contains explanations of parameters used with **set attention**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

character

A sequence of two characters used to signal attention. It can consist of any printable ASCII character *except* # or @ or any control character sequence *except* ^h, ^i, ^j, or ^m. The , , and/or key cannot be used.

Enter control characters by pressing and the character; enter the Escape (Esc) key by pressing .

The default attention signal is .

```
MRC> set attention    
MRC>
```

SCREEN 7-33. One-line Entry: Resetting the Attention Signal

set b

The **set b** command enables you to specify options for the workstation B port regarding signal output from alarm activator unit, displays of alarms and status messages, data transmission rate, and accessing the command mode. This information is stored in nonvolatile memory.

If the command is entered correctly, the system does not issue any response other than the **MRC>** prompt. If port B was previously set to the parameter option specified, the MRC function ignores your request and outputs a new line followed by the **MRC>** prompt.

Syntax

You must input **set b** (**se b**) in lowercase letters, as a one-line entry only.

```
MRC> set b <parameter> <option>
```

Parameters

This section contains explanations of parameters used with **set b**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

aaU

Specifies if the MRC function should output signals to the *alarm activator unit* attached to the workstation B port. If set to *on*, signals are output; if set to *off*, they are not output.

a l a r m

Specifies if MRC-generated alarms and status messages should be output to the workstation B port. If set to *on*, alarms and messages are output; if set to *off*, the default, they are not output. (Alarms are output to the workstations when *alarm* is *on*; status messages are output to the workstation when *alarm* is *on* and the workstation is MRC command mode.)

b a u d

Specifies if the workstation B port data transmission rate should be set to 300, 1200, 2400, 4800, 9600, or 19200 bits per second. The workstation port B is initially set to 1200 to match the default setting for the Control Computer port B. (The baud rate setting for the workstation port B specified via the MRC **set b baud** command should match the baud rate setting for port B specified via the **enter node** or **change node** command. If the setting matches, it does not have to be changed.)

c o m m a n d

Specifies if the workstation B port can enter the MRC command mode via entry of an attention signal. If *on*, the port can access the MRC command mode via an attention signal; if *off*, the default, the port cannot access the MRC command mode via an attention signal.

set b

```
MRC> set b aau on
MRC>
```

SCREEN 7-34. One-line Entry: Setting Alarm Activator Unit for Port B

```
MRC> set b alarm on
MRC>
```

SCREEN 7-35. One-line Entry: Setting Alarms to be Output to Port B

```
MRC> set b baud 19200
MRC>
```

SCREEN 7-36. One-line Entry: Setting 19200 bps Baud Rate for Port B

```
MRC> set b command on
MRC>
```

SCREEN 7-37. One-line Entry: Setting Command Mode for Port B

set m

The **set m** command enables you to specify the baud for port M.

NOTE: Unlike the workstation A and B ports, the parameters that enable you to specify options regarding signal output from alarm activator unit, displays of alarms and status messages, and accessing the command mode are preset for port M to *aau off*, *alarm on*, and *command on*. Since these parameters are preset, they cannot be changed through iterations of the **set m** command. The baud rate is stored in nonvolatile memory.

If the command is entered correctly, the system does not issue any response other than the **MRC>** prompt. If port M was previously set to the parameter option specified, the MRC function ignores your request and outputs a new line followed by the **MRC>** prompt.

Syntax

You must input **set m** (**se m**) in lowercase letters, as a one-line entry only.

```
MRC> set m baud <option>
```

Parameters

This section contains explanations of parameters used with **set m**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

baud

Specifies if port M data transmission rate should be set to *300*, *1200*, *2400*, *4800*, *9600*, *14400*, or *19200* bits per second. The M port is initially set to *9600* to match the default setting for the Control Computer A port. If *14400* is administered, the baud rates for the A and B ports should be administered as *9600* or less to avoid corrupting or losing data.

```
MRC> set m baud 19200
MRC>
```

SCREEN 7-38. One-line Entry: Setting 19200 bps Baud Rate for Port M

set m password

The **set m password** command enables you to specify a password for port M. It must be run from port M.

To set your password, type a password at the **Enter Password** prompt, then re-type it at the **Re-enter Password** prompt.

Syntax

You must input **set m password** in lowercase letters, as a one-line entry only.

```
MRC> set m password
```

Parameters

This section contains explanations of parameters used with **set m password**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

password

Specifies the password used for port M. A password must contain four to eight alphanumeric or special characters. Control, tab, and space characters cannot be part of a password. To clear an existing password, enter the string *none*. Note that the password is not displayed when it is typed.

```
MRC> set m password
Enter Password:
Re-enter Password:
MRC>
```

SCREEN 7-39. One-line Entry: Setting a Password for Port M

set name

The **set name** command enables you to enter the name of the local node (as it appears in the node database via the **verify node** command) into the MRC database. The name of the local node can then appear on MRC-generated reports, system responses, and alarms.

Since the name of the local node must be entered into the MRC database manually, you must enter it *exactly* as it appears on the current output of the **verify node** command. The MRC function does not ensure that name of the local node entered with the **set name** command matches the name of the local node entered with the **enter node** command.

Syntax

You must input **set name** (**se n**) in lowercase letters, as a one-line entry only.

```
MRC> set name <node name>
```

Parameters

This section contains explanations of parameters used with **set name**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

nodename

A string of 1 to 8 alphanumeric characters identifying the name of the local node as it appears in the node database. The default is 8 blank characters.

```
MRC> set name Redqueen  
MRC>
```

SCREEN 7-40. One-line Entry: Setting the Local Node Name

set recovery

The **set recovery** command enables you to turn the MRC automatic recovery feature to *on* or *off*. When set, the recovery feature enables the MRC function to reboot the active Control Computer automatically—and, if an in-service standby Control Computer is present, to activate the standby Control Computer.

If a standby Control Computer is not present, the MRC function only attempts to reboot the active Control Computer. However, in a single Control Computer environment, the standby Control Computer must be removed (see **remove standby**) if recovery is to be set to *on*. The MRC function automatically resets the Control Computer if it fails.

Syntax

You must input **set recovery** (**se r**) in lowercase letters, as a one-line entry only.

```
MRC> set recovery <parameter>
```

Parameters

This section contains explanations of parameters used with **set recover**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

on

Specifies that the MRC automatic recovery feature is to be turned *on*.

off

Specifies that the MRC automatic recovery feature is to be turned *off*.

```
MRC> set recovery on
MRC>
```

SCREEN 7-41. One-line Entry: Activating MRC Automatic Recovery

```
MRC> set recovery off
MRC>
```

SCREEN 7-42. One-line Entry: De-activating MRC Automatic Recovery

set time

MRC time is initially set to the current eastern standard time. The **set time** command enables you to reset the time that is to appear on MRC reports, displays, system response, and alarms.

MRC time is not automatically synchronized with Control Computer time nor is it affected by any software downloads. Since the time known to Control Computer should match the time known to the MRC function as closely as possible, use the current output of the operations **display time** command when resetting MRC time. The MRC function does not verify if MRC time entered with the MRC **set time** command matches the Control Computer time entered with the operations **set time** command.

Syntax

You must input **set time (se t)** in lowercase letters, as a one-line entry only.

```
MRC> set time hh:mm:ss yy/mo/dd
-or -
MRC> set time yy/mo/dd hh:mm:ss
-or -
MRC> set time yy/mo/dd
-or -
MRC> set time hh:mm:ss
```

Parameters

This section contains explanations of parameters used with **set time**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

yy

A number from *00* to *99* that specifies the last two digits of the current *year*.

mo

A number from *01* to *12* that represents the current month.

dd

A number from *01* to *31* that specifies the current *day* of the month.

hh

A number from *00* to *23* that specifies the *hour* of the day.

mm

A number from *0* to *59* that specifies the *minute* of the hour.

ss

A number from *0* to *59* that specifies the *seconds* of the minute.

set time

```
MRC> set time 95/1/31 13:30:22
MRC>
```

SCREEN 7-43. One-line Entry: Resetting MRC Time and Date

System Responses

The following system responses could be output after entry of the **set** commands.

INPUT ERROR: <command verb> is not a command.

Type 'help' for a list of MRC commands.

You did not input the verb portion of the command correctly. Either re-enter the command or type **help** for assistance.

INPUT ERROR: <command verb> has missing or incorrect arguments.

Type 'help <command verb>' for help.

You did not input the parameter (arguments) or parameter option (value) portion of the command correctly. Either re-enter the command or type **help <command verb>** for assistance.

INPUT ERROR: Incorrect day format.

You entered the day of the year incorrectly when you input **set time**.

INPUT ERROR: Incorrect hour format.

You entered the hour of the day incorrectly when you input **set time**.

INPUT ERROR: Incorrect minute format.

You entered the minute of the day incorrectly when you input **set time**.

INPUT ERROR: Incorrect year format.

You entered the year incorrectly when you input **set time**.

set <port> baud command failed. Incorrect baud rate.

Indicates a nonsupported baud rate was specified during an iteration of the **set a baud**, **set b baud**, or **set m baud** command.

switchover command set

The **switchover** command enables the MRC function to switch the operating status of both Control Computers.

switchover

When the **switchover** command executes, the standby Control Computer assumes the role of the active Control Computer and the active Control Computer assumes the role of the standby Control Computer.

If a switchover to a *failed* standby Control Computer is attempted, the MRC function warns that the standby has failed and queries if the switchover should continue. At this point, the switchover can be aborted. If the standby Control Computer is removed from service, the command fails.

If the **switchover** command is entered from the workstation ports A or B, the MRC function attempts to connect to the active Control Computer. For example, if **switchover** is entered from the workstation A port, the workstation is automatically connected back to the active Control Computer if the workstation M port is not connected to port A of the active Control Computer.

Caution: The **switchover** command results in the resetting of *both* Control Computers. In addition, **switchover** can cause an ungraceful reboot that is equivalent to pushing the reset button on an operational system. Use **fsck** to check the file system and the integrity of the disk.

Syntax

You must input **switchover** in lowercase letters, as a one-line entry only.

```
MRC> switchover
```

If standby control computer is in the failed state:

```
WARNING: Standby control computer <n> is failed. Continue switchover (y/n):
```

Parameters

This section contains explanations of parameters used with **switchover**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

WARNING: Standby control computer ... Continue switchover (y/n)

Specifies if the MRC function should continue (y for yes) or abort (n for no) the switchover routine.

```
MRC> switchover
WARNING: Standby control computer 0 is failed. Continue switchover (y/n): y
```

SCREEN 7-44. One-line Entry/Output: Switching to a Failed Standby Control Computer

```
MRC> switchover
```

SCREEN 7-45. One-line Entry: Switching to a Booting or In-service Standby Control Computer

System Responses

The following responses could be output after entry of the **switchover** command.

INPUT ERROR: <command verb> is not a command.

Type 'help' for a list of MRC commands.

You did not input the verb portion of the command correctly. Either re-enter the command or type **help** for assistance.

INPUT ERROR: Enter 'y' for yes or 'n' for no.

You entered the entire word *yes* or *no* rather than typing just a *y* or an *n*.

switchover command terminated.

By user request.

You entered an *n* for no in order to abort the switchover to the failed standby Control Computer.

switchover failed.

A recovery is in progress.

You attempted to switchover to the standby Control Computer, but the command could not execute because a recovery was in progress.

switchover failed.

Standby control computer is out of service.

You attempted to switchover to the standby Control Computer, but the command could not execute because the standby Control Computer is out of service.

Utility Commands

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Utility Commands

The node utility commands enable a network administrator to synchronize the contents of the database to the disk; audit an existing database and resize tables to accommodate system growth; verify and copy data from one disk partition to another; audit and correct inconsistencies in file systems and mount file systems on special devices; copy, move, and remove files, list directory contents, and reboot the node. The node utility commands are input at the **UTILITY>** mode prompt.

Utility Shells

There are two associated environments or *utility shells* from which command execution can occur. These environments, which are the *standalone utility shell* and the *operations utility shell*, are distinguished by their method of entry and the processes or applications that execute concurrently in each. The **UTILITY>** prompt is used in both environments.

The standalone environment is entered by stopping all Control Computer functions and rebooting the system (**stop**); see **Startup Commands**. Call processing is not enabled. The operations environment is entered by simply suspending the operations mode (**utilsh**).

As the name suggests, in the standalone utility shell, only a single process can execute at one time. Each process is a critical application that must "stand alone," such as the database upgrade (**dbupgrd**). In addition, most disk-related copy and verify commands must be executed as standalone processes.

In the operations utility shell, multiple processes can execute (or "operate") concurrently. Certain commands that can *only* be executed from this shell are used to audit and resize database space (**dbaudit** and **dbresize**), load a new software release (**loadrel**), halt the execution of the Control Computer and go into loader mode (**stop**) or into the operations mode (**exit**).

The remaining commands can be executed in either the standalone utility shell or the operations utility shell. These commands are used to copy, list, move, or remove files (**cp**, **ls**, **mv**, and **rm**); mount, unmount, and check file systems (**mount**, **umount**, and **fsck**); synchronize the database (**sync**); and reboot the system (**reboot**). The following table clarifies these points:

Caution: If the commands designated for entry only in the standalone utility shell are run from the operations utility shell, they will damage the file system or simply exit.

TABLE 8-1. Shells Associated with Utility Command Execution

Execute in		
Standalone Utility Shell	Operations Utility Shell	Either Shell
dbupgrd diskcopy diskcpvy diskvfy	dbaudit dbresize exit loadrel mcsusage	copystage copystby cp dupdisk fsck ls mount mv reboot rm stop sync umount

Utility Mode Access

The standalone shell can be accessed with the controller mode switch in either the ENABL or DIAG position; see the mode access diagrams in the **Node Commands Overview**. The following screen shows an example when the controller mode switch is in the ENABL position. You can access and exit from the standalone utility shell and the operations utility shell, as shown in the following examples. All the sample screens display output that results when the controller mode switch is in the ENABL position.

```
CC0> stop
*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type 'help' or '?' for help
LOADER> run
Active CC
Loading text
Loading data
Clearing bss
Booted from Device: 5/0
Local Memory Size = <number>
Available Memory: <number> End of Supervisor: <number>

The controller mode switch is not in the "enabled" state. What should be run?

Option                Description
<return>              /etc/config, the default
sh                    /bin/mini_sh, an interactive shell
fsck <options> <file system> defaults to checking root
{cmd} [arg ...]       execute "cmd" with optional arguments.

-tty preceding a command leaves the console closed. This is required
if you are going to run an alternate "config" or "mini_sh".

<STARTUP> $ sh
MINI-SH: What can I do for you?
UTILITY>

<You are now in the startup utility shell;
no other applications are running.>
```

SCREEN 8-1. Sample: Accessing the Standalone Utility Shell During the Booting Sequence


```
UTILITY> reboot
. . .
CC0>
```

SCREEN 8-2. Sample: Leaving the Standalone Utility Shell to Go to the Operations Utility Shell

```
CC0> initialize standalone

*** Trying To Boot From Primary Disk ***

A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR

Active CC
Loading text
Loading data
Clearing bss

Booted from Device: 5/0
Local Memory Size = <number>
Available Memory: <number> End of Supervisor: <number>

WARNING: SYSTEM RUNNING SHELL ON BOTH PORTS A AND B.
DO NOT RUN COMMANDS FROM BOTH PORTS SIMULTANEOUSLY.

Entering the stand-alone shell on PORT A.

MINI-SH: What can I do for you?
UTILITY>
```

SCREEN 8-3. Sample: Accessing the Standalone Utility Shell from the Operations Utility Shell

To access the operations utility shell from operations mode, type the operations command **utilsh** at the **CC0>** or **CC1>** prompt. When the **UTILITY>** prompt appears on the system console, you are in the operations utility shell.

```
CC0> utilsh
MINI-SH: What can I do for you?
UTILITY>
<You are now in the operations utility shell; other applications could be running.>
```

SCREEN 8-4. Sample: Accessing Utility Mode from Operations Mode

```
UTILITY> exit
CC0>
```

SCREEN 8-5. Sample: Leaving Operations Utility Shell to Go to Operations Mode

Command Conventions and Entry Method

The utility commands are entered in lowercase letters, in their existing state; they do not have any abbreviations. All commands must be entered as one-line entries.

Utility mode has two environments, or shells, from which command execution can occur. To run successfully, each command must be entered from a particular shell. See the previous section, Utility Shells, to determine proper command entry.

On-line Help and System Responses

Unlike other modes of operation, utility mode does not have any on-line help commands.

The system responses are not categorized by type of error, and are explained within each command discussion.

utility command set

The following sections detail the more than 20 commands available to the node administrator for use in utility mode.

chgtape (CCM system only)

The **chgtape** command enables the CCM system to read a 40MB tape, which is the standard tape used on an ECPU system.

NOTE: If a 40MB tape drive is read without having first run **chgtape**, the read operation (using the **retrieve backup** command) fails.

Syntax

You can input **chgtape** in one-line entry from the operations utility shell or from the standalone utility shell.

```
UTILITY> chgtape
Linking chgtape tape to backup tape device
Are you sure you want to do this (enter y for yes)?
```

Parameters

This section contains the explanation of the parameter used with **chgtape**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

Are you sure you want to do this?

Specifies (y for "yes") that the 40MB tape is to be linked to the backup tape device.

```
UTILITY> chgtape
Linking chgtape tape to backup tape device
Are you sure you want to do this (enter y for yes)? y
UTILITY>
```

SCREEN 8-6. One-line Entry: Enabling the CCM System to Read the 40MB Tape Drive on an ECPU System

System Responses

The **chgtape** command has the following associated system response:

Linking 40MB tape to backup tape device

Indicates that 40MB is to be linked to the backup tape device.

copystage

The **copystage** command enables you to copy the active partition on the disk to the staging partition. The staging partition is then updated for booting when a new disk layout is installed with the **install disklayout** command.

Syntax

You can input **copystage** in one-line entry format only from the standalone utility shell.

```
UTILITY> copystage
```

Parameters

None.

```
UTILITY> copystage

Copying the active partition to the staging partition.
Type ? for help.
>
Current source offset:
19e00
>

Checking the staged file system.
*** Adjustments to the file system are expected
*** as a result of copying a live file system.

/dev/rdskp1
File System: <name> Volume: <<number>

** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
FREE INODE COUNT WRONG IN SUPERBLK
FIXED
** Phase 5 - Check Free List
3 BLK(S) MISSING
BAD FREE LIST
SALVAGED
** Phase 6 - Salvage Free List
557 files 47220 blocks 5648 free
*** FILE SYSTEM WAS MODIFIED ***
UTILITY>
```

SCREEN 8-7. One-line Entry/Output: Copying the Active Partition to the Staging Partition

System Responses

There are two system responses for the **copystage** command.

**COMMAND FAILED: Cannot run copystage from stage root device /dev/dskp1.
Reboot from the primary or standby file system.**

Reboot to partition 0 and re-enter the command.

COMMAND FAILED: Copy of active file system to staging partition failed.

Re-enter the command.

copystby

The **copystby** command enables you to create the standby file system on the active disk. The standby file system is used for the operation of dual Control Computers, as well as for troubleshooting.

Syntax

You can input **copystby** in one-line entry format only from the operations utility shell or the standalone utility shell.

```
UTILITY> copystby
```

Parameters

None.

```
UTILITY> copystby
. . .
***Creation of standby file system complete.***
```

SCREEN 8-8. One-line Entry/Output: Creating the Standby File System

System Responses

If an error occurred during command execution, the response **command failed** is printed and the command process exits with a return code 1.

cp

The **cp** command enables you to copy the contents of one or more files to a specified target, while leaving the contents of the original file untouched. The target can be a file or a directory. If the target is a directory, the files are copied to that directory. If the target is a file, its contents are destroyed and replaced; but mode, owner, and group are not changed. If the target is not a directory or an existing file, a new file is created with the same mode as *file1* and the owner and group of the user.

The last modification time of the target (and last access time, if the target did not exist) and the last access time of *file1* are set to the time the copy was made. If the target is linked to other files, all links remain, but the file contents are destroyed and replaced.

Syntax

You can input **cp** in one-line entry format only from the operations utility shell or the standalone utility shell.

To copy a file:

```
UTILITY> cp <file1> [ <file2 ...> ] <target>
```

Parameters

This section contains explanations of parameters used with **cp**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

filex

Specifies the names of the files to be copied. The names of *file1* and *target* can **never** be the same. If *target* is the name of an existing file, **cp** overwrites the old contents of *target*. All filenames on the command line, except the last one, are interpreted as source files.

target

Specifies the name of the destination file or directory. When renaming a file, *target* is the new name of the file. If *target* is not the name of an existing file, a new file is created. The new file has the same mode as the file that was copied. If *target* is a directory, one or more files are copied to that directory.

```
UTILITY> cp oldfile newfile
```

SCREEN 8-9. One-line Entry: Copying a File to Another File

System Responses

The **cp** command does not have any associated system responses.

dbaudit

The **dbaudit** command enables you to generate reports detailing database usage for resources such as concentrators, modules, ports, endpoints, and other system entities. Two levels of detail are available: the first level displays the percentage and amount of the resource that is available; the second level displays the usage of the database tables for each resource.

Syntax

You can input **dbaudit** in one-line entry from the operations utility shell only.

```
UTILITY> dbaudit [-l<option>]
```

Parameters

This section contains explanations of parameters used with **dbaudit**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

-l<option>

An optional number, from 0 to 1, that specifies the information to be displayed for each system resource:

- 0 This level, which is the default, displays the percentage and amount of the resource available. (This level can also be generated by not specifying any option after **dbaudit**.)
- 1 This level displays the usage of database tables for each resource; it includes the maximum size of the table, and the amount available and the amount used. (This level is especially useful when running **dbresize**.)


```

UTILITY> dbaudit -l0
          Database Table Usage (version = BN2.F-2, size = 874860)

Resource      % Available  # Available  Misc Information
-----
Concentrators    99%           252
Modules          99%           575
Ports            100%          6395
Endpoints        100%          5390
PDDs             100%          2000
PDD addresses    100%          2500
PDD Space        100%          6000
Address Names    100%          3000
Logoff Strings   100%           50
Address Numbers  100%          3500
X.25 Gateways    100%           10
Gateway Maps     100%          512
CUG Profiles     100%           750
CUG List Entries 100%          6000
Call Scr Profiles 100%          100
SP List Entries  100%          1024
Pattern Space    100%         27036
Rtt Module Entries 100%           50
Rtt CS Entries   100%          500
Node RT Entries  100%          100
Threshold Entries 80%           16
SMDS SNI Entries 100%          100
SNI IND. Entries 100%          800
SNI SCR. Entries 100%         6400
SNI GRP. Entries 100%          2400
Attributes       100%          2599      Share ratio = 1:1
Attribute Space   100%         31992      Largest free blk = 31992
Billing Profiles  100%           8
CUG Maps         100%           8
Groups           100%          4093
Host Names       100%          254
X.3 Profiles     85%           17
Data Strings     100%         65488      Largest free blk = 65488

```

SCREEN 8-10. One-line Entry/Output: Generating a BNS-2000 Database Table Usage Report (Level 0)

```

UTILITY> dbaudit -l1
          Database Table Usage (version = BN2.F-2, size = 874860)

tbl_name  %free totcnt free  in_use hi_id  misc_info
-----
COMM      99%      254   252    2     1
DEVINDEX  97%   4176  4044    5   131  # Reserved = 127
DEVCON    99%    580   575    5   128
PORTINDEX 100%   9280  9267    5    12  # Reserved = 8
PORT      100%   6400  6395    5     4
LDEV      100%   5400  5390   10     9
PDDTAB    100%   2000  2000    0    -1
PADDR     100%   2500  2500    0    -1
PADDRSORT 100%   2500  2500    0    -1
PDD_STR   100%   6000  6000    0    -1
SNAME     100%   3000  3000    0    -1
LOGTAB    100%     50    50     0    -1
NUMBER    100%   3500  3500    0    -1
NUMSORT   100%   3500  3500    0    -1
GATEWAY   100%     10    10     0    -1
GWSORT    100%     10    10     0    -1
GWMAP     100%    512   512     0    -1
CPROFILE  100%    750   750     0    -1
CUGSORT   100%    750   750     0    -1
CUGLIST   100%   6000  6000    0    -1
SPROFILE  100%    100   100     0    -1
SPSORT    100%    100   100     0    -1
SPLIST    100%   1024  1024     0    -1
SPSTRING  100%  27036  27036    0    -1
RTTMOD    100%     50    50     0    -1
RTTLIST   100%    128   128     0    -1
RTTCS     100%    500   500     0    -1
CSINDEX   100%   3200  3200     0    -1
NODERT    100%    100   100     0    -1
NRTSORT   100%    100   100     0    -1
THSMDS    80%     20    16     4     3
THLIST    80%     20    16     4     3
SNISMDS   100%    100   100     0    -1
SNILIST   100%    508   508     0    -1
SNIINDADR 100%    800   800     0    -1
SNIINDLIST 100%    800   800     0    -1
SNISCRADR 100%   6400  6400     0    -1
SNISCRLIST 100%   6400  6400     0    -1
SNIGRPADR 100%   2400  2400     0    -1
SNIGRPLIST 100%   2400  2400     0    -1
ATTRINDEX 100%   2600  2599     1     0  Share ratio = 1:1

```

SCREEN 8-11. One-line Entry/Output: Generating a BNS-2000 Database Table Usage Report (Level 1)

ATTR_MAP	100%	1300	1297	1	1	# Reserved = 2
ATTRIBUTES	100%	32000	31992	8	0	Largest free blk = 31992
BILLPROF	100%	8	8	0	-1	
BPSORT	100%	8	8	0	-1	
CMPROF	100%	8	8	0	-1	
CMAPSORT	100%	8	8	0	-1	
CMAPLIST	100%	2040	2040	0	-1	
GRPHDR	100%	4099	4093	6	6	
G_NLIST	100%	4100	4094	6	5	
H_NLIST	100%	254	254	0	-1	
XPROFILE	85%	20	17	3	2	
DSTRMAP	100%	2000	1997	1	1	# Reserved = 2
DSTRING	100%	65520	65488	32	0	Largest free blk = 65488

SCREEN 8-12. One-line Entry/Output: Generating a BNS-2000 Database Table Usage (Level 1)*(continued)*

```
UTILITY> dbaudit -l0
```

```
Database Table Usage (version = <code> size = <number>)
```

Resource	% Available	# Available	Misc Information
-----	-----	-----	-----
Concentrators	100%	253	
Modules	99%	575	
Ports	100%	6396	
Endpoints	100%	5385	
PDDs	100%	2000	
PDD Space	100%	24000	
Address Names	100%	3997	
Logoff Strings	100%	50	
Address Numbers	100%	4095	
X.25 Gateways	100%	10	
Gateway Maps	100%	512	
CUG Profiles	100%	2000	
CUG List Entries	100%	16000	
Call Scr Profiles	100%	100	
SP List Entries	100%	1024	
Pattern Space	100%	32760	
Rtt Module Entries	100%	50	
Rtt CS Entries	100%	500	
Node RT Entries	100%	100	
Attributes	100%	2596	Share ratio = 1:1
Attribute Space	100%	31916	Largest free blk = 31916
Billing Profiles	100%	8	
CUG Maps Profile	100%	8	
Groups	100%	2042	
Host Names	100%	254	
X.3 Profiles	85%	17	
Data Strings	100%	65436	Largest free blk = 65436

```
UTILITY>
```

SCREEN 8-13. One-line Entry/Output: Generating a BNS-2000 VCS Database Usage Report (Level 0)

```

UTILITY> dbaudit -l1
      Database Table Usage (version = <code> size = <number>)
tbl_name  %free  totcnt  free   in_use  hi_id  misc_info
-----
COMM      100%    254    253      1      0
DEVINDEX  97%    4176  4048      5     127  # Reserved = 123
DEVCON    99%     580   575      5     22
PORTINDEX 100%   9280  9266      4     13  # Reserved = 10
PORT      100%   6400  6396      4      3
LDEV      100%   5400  5385     15     14
PDDTAB    100%   2000  2000      0     -1
PDD_STR   100%  24000 24000      0     -1
SNAME     100%   4000  3997      3      2
LOGTAB    100%     50   50      0     -1
NUMBER    100%   4098  4095      3      2
NUMSORT   100%   4098  4098      0     -1
GATEWAY   100%     10   10      0     -1
GWSORT    100%     10   10      0     -1
GWMAP     100%    512   512      0     -1
CPROFILE  100%   2000  2000      0     -1
CUGSORT   100%   2000  2000      0     -1
CUGLIST   100%  16000 16000      0     -1
SPROFILE  100%     100   100      0     -1
SPSORT    100%     100   100      0     -1
SPLIST    100%   1024  1024      0     -1
SPSTRING  100%  32760 32760      0     -1
RTTMOD    100%     50   50      0     -1
RTTLIST   100%    128   128      0     -1
RTTCS     100%    500   500      0     -1
CSINDEX   100%    800   800      0     -1
NODERT    100%    100   100      0     -1
NRTSORT   100%    100   100      0     -1
ATTRINDEX 100%   2600  2596      4      3  Share ratio = 1:1
ATTR_MAP  100%   1300  1297      1      1  # Reserved = 2
ATTRIBUTES 100%  32000 31916     84      0  Largest free blk = 31916
BILLPROF  100%     16   16      0     -1
BPSORT    100%     16   16      0     -1
CMPROF    100%     16   16      0     -1
CMAPSORT  100%     16   16      0     -1
CMAPLIST  100%     100   100      0     -1
GRPHDR    100%   2047  2042      5      5
G_NLIST   100%   2048  2043      5      4
H_NLIST   100%    254   254      0     -1
XPROFILE  85%      20   17      3      2
DSTRMAP   100%   2000  1997      1      1  # Reserved = 2
DSTRING   100%  65520 65436     84      0  Largest free blk = 65436
UTILITY>

```

SCREEN 8-14. One-line Entry/Output: Generating a BNS-2000 VCS Database Usage Report (Level 1)

Report Fields

Address Names

The percentage and number of service addresses available that can be entered into the database. This value includes the number of mnemonic service addresses, mnemonic or X.121 service addresses used for speedcalls, or any mnemonic or X.121 service addresses that have one or more directory entries, originating group security pattern, X.3 profile, high level protocol, or group.

Address Numbers

The percentage and number of numeric addresses that can be entered into the database. This value includes all service addresses (mnemonic and numeric) and X.121 endpoint number port addresses.

Attribute Space

The percentage and number of ASCII characters that are available to define attributes.

ATTRIBUTES

The table name for attribute data space. BNS-2000 Number of entries: 1 is the minimum; 65,520 is the maximum; 32,000 is the default. BNS-2000 VCS Number of entries: 100 is the minimum; 65,520 is the system maximum; 32,000 is the system default.

Attributes

The percentage and number of unique attribute entries available for use. An attribute entry, which tracks the characteristics of modules or ports, can be shared, in most instances, by multiple components. For example: one attribute entry for all TY port attributes can be entered numerous times, but is still one shared entry. Exceptions are calling addresses entered for X.25 modules or ports.

ATTRINDEX

The table name for attribute structures. BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 2,600 is the default. BNS-2000 VCS Number of entries: 10 is the minimum; 32,767 is the maximum; 2,600 is the system default. This table is adjustable.

ATTR_MAP

The table name for the memory map entry for attribute data. BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 1,300 is the default. BNS-2000 VCS Number of entries: 10 is the minimum; 32,767 is the maximum; 1,300 is the system default. This table is adjustable.

#Available

For level 0 output, the quantity (how many) of each resource currently available for use in the system.

%Available

For level 0 output, the percentage of the resource currently available for use in the system.

Report Fields *(continued)***BILLPROF**

The name for the X.75 billing profile. Gives the number of billing profiles.

BPSORT

For BNS-2000 VCS nodes, the internal sort table that gives the number of billing profiles.

Call Scr Profiles

The percentage and number of call screening profiles that can be entered into the database.

CMPROF

For BNS-2000 VCS nodes, the number of CUGMAP profiles.

CMAPSORT

For BNS-2000 VCS nodes, the internal sort table that gives the number of CUGMAP profiles.

CMAPLIST

For BNS-2000 VCS nodes, a list of CUG maps that gives the number of CUG entries in all CUG map profiles.

COMM

The table name for the community (backplane, concentrators, bisync lines, session maintenance trunks). Number of entries: 1 is the minimum; 255 is the maximum; 254 is the default. This table is adjustable.

Concentrators

The percentage and number of concentrators that can be entered into the database. This value includes the number of remote shelves, SAMs, and Bridging concentrators that can be administered.

CPROFILE

The table name for CUG profiles. BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 750 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 2,000 is the system default. This table is adjustable.

CUGLIST

The table name for the CUG list. BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 6,000 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 16,000 is the system default. This table is adjustable.

CUG List Entries

The percentage and number of closed user group members that are available for defining CUG profiles.

Report Fields *(continued)***CUG Profiles**

The percentage and number of closed user groups that can be entered into the database.

CUGSORT

The table name for CUG profiles. This table is automatically resized. BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 750 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 2,000 is the system default. This table is adjustable.

Data Strings

The percentage and number of ASCII characters that can be used in the system for data strings. This value includes the number of data strings used for directory assistance, security, password, message of the day, download version and destination upload version, expanded speedcall address, and X.25 calling address. Each string ends with a null character.

DEVCON

The table name for the device controller (module). (One is reserved for each device controller in the community.) Number of entries: 128 is the minimum; 580 is the maximum and the default. This table is adjustable.

DEVINDEX

The table name for the device controller index. (One is reserved for each device controller in the community.) Number of entries: 128 is the minimum; 32,767 is the maximum; 4,176 is the default. This table is adjustable.

DKHEAD

The table name for the head structure. The number of entries is always 1.

DSTRING

The table name for string space bytes. The number of entries is always 65,520. This table is not adjustable.

DSTRMAP

The table name memory map entries for string space. The number of entries is always 2000. This table is not adjustable.

Endpoints

The percentage and number of individually addressable entities that can be defined.

free

The number of elements in the table that are available for use.

% free

The percentage of elements in the table available for use which is the ratio of the number of free elements to the total number of elements in the table.

Report Fields *(continued)***GATEWAY**

The table name for the X.25 or X.75 gateway. Number of entries: 1 is the minimum; 32,767 is the maximum; 10 is the default. This table is adjustable.

Gateway Maps

The percentage and number of gateway address mappings that can be defined for X.25 gateways.

G_NLIST

Along with **GRPHDR**, the table name for the number of groups. The maximum number of groups is always 4,100. This table is not adjustable.

Groups

The percentage and number of groups that can be defined in the database.

GRPHDR

Along with **G_NLIST**, the table name for the number of groups. For BNS-2000 nodes, the number of entries is always 4,100; the maximum is 4,100. For BNS-2000 VCS nodes, the number of entries is always 2,047; the maximum is 2,047. This table is not adjustable.

GWMAP

The table name for the gateway address map. Number of entries: 1 is the minimum; 32,767 is the maximum; 512 is the default. This table is adjustable.

GWSORT

The table name for the X.25 gateway. This table is automatically resized. Number of entries: 1 is the minimum; 32,767 is the maximum; 10 is the default. This table is adjustable.

hi_id

The next (available) index that can be assigned to an element in the table. This index is an internal specification. When the value of this field is negative, this table does not contain any elements.

H_NLIST

The table name for the number of hosts. The number of entries is always 254. This table is not adjustable.

Host Names

The percentage and number of host names that can be entered into the database.

in_use

The number of elements in the table that are being used.

LDEV

The table name for the logical device. Number of entries: 10 is the minimum; 32,767 is the maximum; 5,400 is the default. This table is adjustable.

Report Fields *(continued)***Logoff Strings**

The percentage and number of logoff strings that can be entered.

LOGTAB

The table name for logoff sequences. Number of entries: 1 is the minimum; 32,767 is the maximum; 50 is the default. This table is adjustable.

Misc Information

Any added information concerning the *resource* such as reserved elements or share ratio.

misc_info

Any miscellaneous database information such as the number of reserved elements (Reserved = n) for a table or the ratio of shared elements to used elements (share ratio = N:1).

Modules

The percentage and number of modules that can be entered into the database. These modules are located in the node and in concentrators. For BNS-2000 VCS nodes, this value excludes the node Clock, control modules, the Switch, and Repeaters. It includes the Clock, Switch, and remote link in remote shelves; the TCON in SAMs; and the RCCM and CCOM in the bridging concentrator.

NODERT

The name for the node reroute table. It contains entries used in originating or forwarding session maintenance trunk reroute requests. Number of entries: 1 is the minimum; 32,767 is the maximum; 100 is the default. This table is adjustable.

Node RT Entries

An individual NODERT table entry showing neighbor node name, number of hops, assisting node list [0 is minimum; 50 is maximum; no default] and a list of trunks to the neighbor node [0 is minimum; 5 is maximum; no default].

NRTSORT

An index table for the NODERT containing Node RT Entries listed in alphabetical order. Its size is dependent on NODERT size.

NUMBER

The table name of the numeric address (service and endpoint). BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 3,500 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 4,098 is the system default. This table is adjustable.

Report Fields *(continued)***NUMSORT**

The table name for the numeric address (service and endpoint). BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 3,500 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 4,098 is the system default. This table is automatically resized and is adjustable.

Pattern Space

The percentage and number of ASCII characters that can be used to define call screening security patterns.

PDD Space

BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 24,000 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 6,144 is the system default.

PDDs

The percentage and number of predefined destinations that can be entered in the database.

PDD_STR

The table name for predefined destination string space. BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 6,000 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 24,000 is the system default. This table is adjustable.

PDDTAB

The table name for predefined destinations. Number of entries: 1 is the minimum; 32,767 is the maximum; 2,000 is the default. This table is adjustable.

PORT

The table name for the port. Number of entries: 10 is the minimum; 32,767 is the maximum; 6,400 is the default. This table is adjustable.

PORTINDEX

The table name for the port index. (One is reserved for each port on the device controller.) Number of entries: 10 is the minimum; 32,767 is the maximum; 9,280 is the default. This table is adjustable.

Ports

The percentage and number of ports that can be configured in the database.

Resource

The name of the particular configurable entity in which information regarding system usage is reported in terms of percentage available and number available.

Report Fields *(continued)***RTTCS**

The table containing reroute data for session maintenance trunk channel sets. Number of entries: 1 is the minimum; 32,767 is the maximum; 500 is the default. This table is adjustable.

Rtt CS Entries

An individual RTTCS table entry containing reroute data (such as reroute status) for a specific session maintenance trunk channel set.

RTTLIST

The table showing mapping data for each backplane slot and its associated **RTTMOD** entry, if any. Its size is 128. This table is not adjustable.

RTTMOD

The table for session maintenance trunk module data. Number of entries: 1 is the minimum; 128 is the maximum; 50 is the default. This table is adjustable.

Rtt Module Entries

An individual table entry for a specific session maintenance trunk.

Size

The size of *cfdata* file in bytes.

SMDS SNI Entries

An individual SMDS table entry containing fundamental information on each SMDS SNI.

SNAME

The table name for the service address. BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 3,500 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 4,000 is the system default. This table is adjustable.

SNDB

The table name for the database header. The number of entries is always 1. This table is not adjustable.

SNHEAD

The table name for the control table for adjustable tables. The number of entries is always 1. This table is not adjustable.

SNIGRPADR

The table name for the SMDS SNI group addresses. Number of entries: 48 is the minimum; 4800 is the maximum; 4800 is the default. This table is adjustable.

SNI GRP. Entries

An SNIGRPADR table entry containing group address data associated with each SMDS SNI.

SNIGRPLIST

The table name for the SMDS SNI group address list. Number of entries: 48 is the minimum; 4800 is the maximum; 4800 is the default. This table is adjustable.

Report Fields *(continued)***SNIINDADR**

The table name for the SMDS SNI individual addresses. Number of entries: 16 is the minimum; 1600 is the maximum; 1600 is the default. This table is adjustable.

SNI IND. Entries

An individual SNIINDADR table entry containing individual address data associated with each SMDS SNI.

SNIINDLIST

The table name for the SMDS SNI individual address list. Number of entries: 16 is the minimum; 1600 is the maximum; 1600 is the default. This table is adjustable.

SNILIST

The table name for the SMDS SNI list. Number of entries: 252 is the minimum; 252 is the maximum; 252 is the default. This table is not adjustable.

SNISCRADR

The table name for SMDS SNI screening addresses. Number of entries: 128 is the minimum; 12,800 is the maximum; 12,800 is the default. This table is adjustable.

SNI SCR. Entries

An individual SNISCRADR table entry containing group or individual screening address data associated with each SMDS SNI.

SNISCRLIST

The table name for SMDS SNI screening address list. Number of entries: 128 is the minimum; 12,800 is the maximum; 12,800 is the default. This table is adjustable.

SNISMDS

The table name for the SMDS SNIs. Number of entries: 1 is the minimum; 200 is the maximum; 100 is the default. This table is adjustable.

SPLIST

The table name for call screening patterns. Number of entries: 1 is the minimum; 32,767 is the maximum; 1,024 is the default. This table is adjustable.

SP List Entries

The percentage and number of call screening security patterns that are available for administering call screening profiles.

SPROFILE

The table name for call screening profiles. Number of entries: 1 is the minimum; 32,767 is the maximum; 100 is the default. This table is adjustable.

Report Fields *(continued)***SPSORT**

The table name for call screening profiles that are automatically resized. Number of entries: 1 is the minimum; 32,767 is the maximum; 100 is the default. This table is adjustable.

SPSTRING

The table name for call screening pattern space. BNS-2000 Number of entries: 1 is the minimum; 32,767 is the maximum; 27,036 is the default. BNS-2000 VCS Number of entries: 1 is the minimum; 32,767 is the maximum; 32,760 is the system default. This table is adjustable.

tbl_name

The name of the database table.

THLIST

The table name for SMDS threshold list. Number of entries: 20 is the minimum; 20 is the maximum; 20 is the default. This table is not adjustable.

Threshold Entries

An individual THSMDS table entry containing data for each threshold profile needed by SMDS trunk or AI modules.

THSMDS

The table name for SMDS threshold profiles. Number of entries: 1 is the minimum; 20 is the maximum; 20 is the default. This table is adjustable.

totcnt

The maximum number of elements the table can have. The total number of elements in the table (totcnt) should equal the number of elements that are free (free), plus the number of elements in use (in_use), plus the number of elements that are reserved (misc_info). All tables do not have reserved elements. Currently, DEVINDEX, PORTINDEX, ATTR_MAP, and DSTRMAP tables have reserved elements.

Version

The version of software that corresponds to the release being audited or upgraded.

XPROFILE

The table name for the number of X.3 profiles. (Three are reserved for the default.) The number of entries is always 20. This table is not adjustable.

X.25 Gateways

The percentage and number of X.25 gateways that can be configured in the database.

X.3 Profiles

The percentage and number of X.3 profiles that can be configured in the database. Three entries are reserved for the system X.3 profiles: *simple*, *mbit*, and *transparent*.

System Responses

This section contains system responses for **dbaudit**.

dbaudit: illegal option -- <option>

Usage: dbaudit

OS reason: 0 exit code: 1

An invalid option level has been specified. The valid levels are 0, 1, 2, or 3. See Syntax and Parameters for correct option levels.

dbaudit: option requires an argument -- <level>

Usage: dbaudit

OS reason: 0 exit code:

The level option was specified without indicating a particular level (0 or 1). See Syntax and Parameters.

Illegal level <level>

Usage: dbaudit

OS reason: 0 exit code: 1

An invalid level has been specified. The valid levels are 0 or 1. See Syntax and Parameters for correct levels.

dbresize

The **dbresize** command enables you to resize database tables automatically in order to accommodate network growth.

NOTE: Use **dbaudit** <-l1> before **dbresize** to determine if database tables need to be resized.

First, **dbresize** determines how many table entries currently exist in each table; then it proportionately increments the size allocated for each table so current requirements are satisfied. Meaning, tables that currently require more space are allocated more space than the tables that currently require less space. Once a new set of tables have been created, they are written to a template file in */dbtemplates* and the file is installed in */etc*. Report output consists of table names and their old and current entries, along with a new entry limit. Once **dbresize** is executed, the node must be rebooted for the new table entry sizes to take effect.

In addition, **dbresize** enables you to *back out*, or to undo, the installation of a recently installed template file, providing the node has not yet been rebooted.

Syntax

You can input **dbresize** in one-line entry only from the operations utility shell when the node is fully operational. Resizing does not take effect until the node is rebooted.

To automatically resize database tables:

```
UTILITY> dbresize
```

To "back out" of an installed template file if the node has not been rebooted:

```
UTILITY> dbresize -b
```

Parameters

This section contains explanations of parameters used with **dbresize**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

-b

Specifies that the current template file is to be backed out. This parameter successfully backs out a current template only if the node has not yet been rebooted.


```

UTILITY> dbresize
Database Sizing Report
Maximum Size      776192
Current Usage     135052   (17%)
Total Free Space  641140   (83%)

Table           Old      New
Name            Entry   Entry
                Limit   Limit
-----
COMM            254      205
DEVINDEX        4176     10005
DEVCON          580      580
PORTINDEX       9280     8497
PORT            6400     4454
LDEV            5400     9594
PDDTAB          2000     1096
PDD_STR         6000      5071
PADDR           2500      753
PADDRSORT       2500      753
SNAME           3500     3563
LOGTAB          50       137
NUMBER          3500     4728
NUMSORT         3500     4728
GATEWAY         10       411
GWSORT          10       411
GWMAP           512      137
CPROFILE        750      342
CUGSORT         750      342
CUGLIST         6000     1027
SPROFILE        100      137
SPSORT          100      137
SPLIST          1024      137
SPSTRING        27036     137
RTTLIST         128     128
RTTMOD          50       128
CSINDEX         800     2048
RTTCS           500     1165
NRTSORT         100      137
NODERT          100      137
ATTRINDEX       2600     2600
ATTR_MAP        1300      1300
ATTRIBUTES      32000     32000
BILLPROF         8       16
BPSORT          8       16
CMPROF          8       16
CMAPSORT        8       16
CMAPLIST        2040      137

Reboot the node to install the new database table sizes.
UTILITY>

```

SCREEN 8-15. One-line Entry/Output: Automatically Resizing BNS-2000 VCS Database Tables

```

UTILITY> dbresize
Database Sizing Report
Maximum Size      972800
Current Usage     133392  (14%)
Total Free Space  839408  (86%)

Table            Old      New
Name            Entry   Entry
                Limit   Limit
-----
COMM            255     255
DEVINDEX        11252    17405
DEVCON          580     580
PORTINDEX       3478     7609
PORT            3352     6469
LDEV            5438    10938
PDDTAB          32767     192
PDD_STR         32767     192
SNAME           696     1143
LOGTAB          127     192
NUMBER          696     1143
NUMSORT         696     1143
GATEWAY         127     192
GWSORT          127     192
GWMAP           127     192
CPROFILE        127     192
CUGSORT         127     192
CUGLIST         127     192
SPROFILE        127     192
SPSORT          127     192
SPLIST          127     192
SPSTRING        127     192
RTTLIST         128     128
RTTMOD          128     128
CSINDEX         8192    8192
RTTCS           3099    4662
NRTSORT         190     288
NODERT          190     288
THLIST          20      20
THSMDS          20      20
SNILIST         252     252
SNISMDS         200     200
SNIINDLIST      1600    1600
SNIINDADR       1600    1600
SNISCRLIST      12800    12270
SNISCRADR       12800    12270
SNIGRPLIST      4800     4662

```

SCREEN 8-16. One-line Entry/Output: Automatically Resizing BNS-2000 Database Tables

One-line Entry/Output: Automatically Resizing Database Tables *(continued)*

```
SNIGRPADR      4800      0      4662
ATTRINDEX      2600     30     2600
ATTR_MAP       1300      4     1300
ATTRIBUTES     32000    576    32000
UTILITY>
```

```
UTILITY> dbresize -b
The next reboot will not change the database table sizes.
UTILITY>
```

SCREEN 8-17. One-line Entry/Output: Backing Out of Database Table Installation***Report Fields**

For a description of each table name that appears in the previous reports, refer to the report field descriptions furnished in **dbaudit**.

Current Usage

The maximum number of entries currently being used in the given table or the total of all entries currently being used in the database.

Maximum Size

The total maximum number of entries that can currently be allocated in the database.

New Entry Limit

The new maximum number of entries the given table will be allocated once the node is rebooted.

Old Entry Limit

The maximum number of entries the given table is currently allocated.

Table Name

The name of the table (as internally known to the database).

Total Free Space

The total remaining space that is free to be allocated in the database.

* Node has not yet been rebooted since the template was resized.

System Responses

This section contains the system responses for **dbresize**.

The dbresize command cannot attach to shared memory: <num>

The command failed. Resizing did not occur. A system error has occurred.

The dbresize command cannot be executed from the startup shell.

Because this command cannot be executed from the **<STARTUP>** prompt, the node must be rebooted. The **dbresize** command can be executed only after going into the operations utility shell.

The dbresize command cannot create a valid sized database.

The command failed. Resizing did not occur because the new database would have been larger than the total size allocated.

The dbresize command did not change any of the database table sizes.

The new and old table sizes are the same. No resizing has occurred.

dbupgrd

The **dbupgrd** command enables you to convert an existing Data Networking Product database to its newest release.

Initially **dbupgrd** validates, then copies, backup archives of the *cfdata* (configuration data), *sysgen* (system generation), and *comments* files. Due to varying space allocations between software releases, the physical size of a database must be determined before an upgrade can be initiated—this process is called *sizing*. If the database has to be sized in order to accommodate the *cfdata* file, **dbupgrd** then proceeds to size the existing database.

NOTE: The **dbresize** command **does not** have to be executed before running **dbupgrd**. If the **dbresize** command was inadvertently run prior to running **dbupgrd** and the node has not been rebooted, any previously existing database tables and their entries can be recaptured by executing **dbresize -b**; see **dbresize**.

In addition, to facilitate migration from one release to another and to verify data integrity, print the output of the appropriate **verify** commands before beginning the upgrade.

When Database Sizing Is Not Required

If **dbupgrd** determines that the allocated space is sufficient and the database does not have to be sized, it begins to convert the *cfdata* file followed by the *comments* and *sysgen* files.

With *cfdata*, **dbupgrd** reads each data entry and converts as many entries as possible to the new release format. Data entries that cannot be converted are reported as they discovered. Most are recoverable errors made during previous data entry sessions or internal database errors such as **cannot find group**. In general, recoverable errors are reported for concentrators and modules, and their components (module ports). For example, an error on a TY port might cause TY module data to be deleted from the database. In this case, **dbupgrd** directs you to re-enter the module and port data or, if possible, to re-enter only a data item. If data must be re-entered and you have printed output of appropriate **verify** commands executed before the upgrade, use these reports to help enter missing data.

When Database Sizing Is Required

If the existing database cannot fit into the space allocated for the new database, **dbupgrd** generates a new set of database tables and automatically adjusts the space allocated for each table entry accordingly. Any entry that cannot be converted is deleted and identified via appropriate system responses. Report output also includes old and new table sizes, which are reported in terms of the number of table entries.

Once the upgrade is completed, the node must be rebooted so the new entries can take effect. Any ensuing data loss can only be recovered after the node is rebooted with various iterations of **enter** and **change** commands. Printed output of the appropriate **verify** commands executed before the upgrade facilitates verification of data integrity.

Syntax

You can input **dbupgrd** in one-line entry from the standalone utility shell only.

```
UTILITY> dbupgrd
<various system responses>
```

Parameters

None.

```
UTILITY> dbupgrd
Validating backup archives...
Backup archive is OK.

Retrieving database from newest backup archive.
Copying /etc/cfdata...
Copying /etc/sysgen...
Copying /etc/comments...

WARNING: If this command fails for any reason, it is recommended that
         help is obtained before continuing the upgrade process.
         If the controller is rebooted after a failure, the database
         will be empty and service will be disrupted.

Upgrading from Release <code> configuration archive.

Sizing the cfdata file...

The database tables have been resized to accommodate database tables from
the previous release that are larger than the current default table
limits. The New Entry Limit column contains the new database table limits.
```

SCREEN 8-18. One-line Entry/Output: Upgrading the Database for Current BNS-2000 VCS Release Software

One-line Entry/Ouput: Upgrading the Database for Current BNS-2000 VCS Release Software *(continued)*

Table Name	Default Entry Limit	Current Usage	New Entry Limit
-----	-----	-----	-----
COMM	254	12	255
DEVINDEX	4176	270	13731
DEVCON	580	156	580
PORTINDEX	9280	224	11401
PORT	6400	132	6739
LDEV	5400	202	10286
PDDTAB	2000	4	253
PDD_STR	24000	37	1925
SNAME	4000	47	2432
LOGTAB	50	5	304
NUMBER	4098	55	2837
NUMSORT	4098	55	2837
GATEWAY	10	13	709
GWSORT	10	13	709
GWMAP	512	5	304
CPROFILE	2000	5	304
CUGSORT	2000	5	304
CUGLIST	16000	9	506
SPROFILE	100	19	1013
SPSORT	100	19	1013
SPLIST	1024	41	2128
SPSTRING	32760	843	32767
RTTLIST	128	0	128
RTTMOD	50	0	101
CSINDEX	800	0	862
RTTCS	500	0	101
NRTSORT	100	0	101
NODERT	100	0	101
ATTRINDEX	2600	52	2600
ATTR_MAP	1300	1	1300
ATTRIBUTES	48000	1068	48000
BILLPROF	8	0	16
BPSORT	8	0	16
CMPROF	8	0	16
CMAPSORT	8	0	16
CMAPLIST	2040	0	100

>

Converting the cfdata file...

Converting the comments file...

Converting the sysgen file...

Upgrade complete.

Reboot the Release <number> system.

UTILITY>

```

UTILITY> dbupgrd
Validating backup archives...
Backup archive is OK.

Retrieving database from newest backup archive.
Copying /etc/cfdata...
Copying /etc/sysgen...
Copying /etc/comments...

Upgrading from Release <code> configuration archive.

Sizing the cfdata file...

The database tables have been resized to accommodate database tables from
the previous release that are larger than the current default table
limits. The New Entry Limit column contains the new database table limits.

```

Table	Old Entry Limit	Current Usage	New Entry Limit
----	-----	-----	-----
COMM	255	10	255
DEVINDEX	11252	182	17405
DEVCON	580	142	580
PORTINDEX	3478	79	7609
PORT	3352	67	6469
LDEV	5438	114	10938
PDDTAB	32767	0	192
PDD_STR	32767	0	192
SNAME	696	11	1143
LOGTAB	127	0	192
NUMBER	696	11	1143
NUMSORT	696	11	1143
GATEWAY	127	0	192
GWSORT	127	0	192
GWMAP	127	0	192
CPROFILE	127	0	192
CUGSORT	127	0	192
CUGLIST	127	0	192
SPROFILE	127	0	192
SPSORT	127	0	192
SPLIST	127	0	192
SPSTRING	127	0	192

SCREEN 8-19. One-line Entry/Output: Upgrading to a BNS-2000 Database

One-line Entry/Output: Upgrading to a BNS-2000 Database *(continued)*

```

RTTLIST      128      41      128
RTTMOD       128       4      128
CSINDEX      8192     256     8192
RTTCS        3099     48     4662
NRTSORT      190       2     288
NODERT       190       2     288
THLIST       20       10     20
THSMDS       20       7      20
SNILIST      252      21     252
SNISMDS      200       3     200
SNIINDLIST   1600      3     1600
SNIINDADR    1600      3     1600
SNISCRLIST   12800     0    12270
SNISCRADR    12800     0    12270
SNIGRPLIST   4800      0     4662
SNIGRPADR    4800      0     4662
ATTRINDEX    2600     30     2600
ATTR_MAP     1300      4     1300
ATTRIBUTES   32000    576    32000
UTILITY>

```

	Old	New
>		
Converting the cfdata file...		
Converting the comments file...		
Converting the sysgen file...		
Upgrade complete.		
Reboot the system.		
UTILITY>		

Report Fields**Current Usage**

The maximum number of entries currently being used in the given table or the total of all entries currently being used in the database.

New Entry Limit

The new maximum number of entries the given table is to be allocated once the node is rebooted.

Old Entry Limit

The maximum number of entries the given table is currently allocated.

Table Name

The name of the table (as internally known to the database). For a description of each table name, refer to **dbaudit**.

System Responses

Depending on the configuration, **dbupgrd** can run for more than 10 minutes. Messages give information on the upgrade process. During this process, messages will be sent on errors that may require re-entry of certain information after the upgrade is complete, but that do not stop the upgrading process.

Normal Responses in Order of Occurrence

Validating backup archives...

Backup archive is OK.

Retrieving database from newest backup archive.

Copying /etc/cfdata...

Copying /etc/sysgen...

Copying /etc/comments...

These responses are status messages output when the database archive is being copied to the file system.

Upgrading from Release <release> configuration archive.

This response contains the generic or release number.

Sizing the cfdata file...

Converting the cfdata file...

> > > > > > > > > >

The configuration data file is being converted. A > character is output every 15 seconds to inform you that the upgrade is still executing. In addition, the process informs you which database entries have been manufactured. Check them and alter them as needed. They are formatted as recoverable errors.

Converting the comments file...

Converting the sysgen file...

These responses announce the last phases of the upgrade process—the conversion of the comments and system generation files.

Upgrade complete.

Reboot the system.

These responses indicates that the database has been upgraded to the current release. The system must now be rebooted.

Responses Requiring Data to be Re-entered or Changed

Cannot Upgrade <type>, id '<id>'.

<text>

Use enter commands to reenter data.

Upgrade error for <type>, id '<id>'.

<text>

Use change commands to fix data as needed.

The previous sets of responses indicate that the information for the specified *type* must be reentered via **enter** or modified via **change**.

The variable designated as <type> and its <id> can be a module name and address (such as *tsm8* module, id *18*); a database element and its name (such as *group*, id *acctg*); or a system entity and its identifier (such as *comment*, id *18.5*; where *18.5* is the module.port).

The variable designated as *text* can be one of the following:

CPM module changed from DTSR to UNIX.

Cannot enter X.3 profile name.

Cannot <enter/find> broadcast message.

Cannot <enter/find> PAD service signal.

Cannot find Billing Profile <id>.

Cannot find CTA Security Profile <id>.

Cannot find CUG <MAP> profile <id>.

Cannot find <local/remote> X.3 profile.

Cannot find PAD service signal.

Cannot find X.25 calling address.

Cannot find X.3 profile: <id>.

Cannot find call screening profile: <id>

Cannot find community.

Cannot find device controller.

Cannot find directory assistance string.

Cannot find download <destination/version> string.

Cannot find gateway: <id>.

Cannot find group.

Cannot find group <name>.

Cannot find hardware type.

Responses Requiring Data to be Re-entered or Changed (continued)

Cannot find host name. Using XXXXXXXX.
Cannot find <line/network> CUG profile.
Cannot find <local/remote> X.3 profile.
Cannot find logical device number in address.
Cannot find logical device number.
Cannot find logical device.
Cannot find logoff sequence: <id>
Cannot find password string.
Cannot find port option data.
Cannot find predefined destination.
Cannot find security pattern string.
Cannot find upload destination string.
Changed port buildout value to default for sam board id '<id>'.
Database error in <routine>: <error number> (<error line>).
No identifier.
No X.3 profile name.
NULL
Trunk is configured as an internodal trunk.
The speed has been set to the correct default for <type>, id '<id>'.

Fatal Errors

Most fatal errors are of the form:

Upgrade failed: <reason>.
<additional explanation>

The following *reason* could be reported:

Cannot create database files.
Cannot <create/read> cfdata file.
Cannot <create/read> comments file.
Cannot <create/read> database files.
Cannot <create/read> sysgen file.
Cannot read backup database.
Cannot send data to database creation program.
Cannot start program to read old database.
Cannot upgrade database that is patched.
The dbupgrd command must be executed in the startup shell.
Reboot the node, enter the startup shell and try again.

Fatal Errors *(continued)*

These responses indicate that the files specified could not be created or read. Any *additional explanations* might include:

- Backup archive is OK.
- Backup archives empty.
- Bad checksum for backup archive.
- Cannot attach.
- Cannot exec.
- Cannot find cfdata file.
- Cannot fork.
- Cannot initialize.
- Cannot open.
- Cannot open /dev/Abkupx.
- Cannot open /dev/Abkupy.
- Cannot open resources.
- Cannot read.
- Cannot seek.
- Cannot stat.
- Cannot update.
- Cannot write.
- Database error in <routine>: <errno> (<errline>).
- Unpatch and try again.

diskcopy

The **diskcopy** command enables you to copy stored data from one disk area to another. The command is used to update a disk when a disk is replaced, a file system is damaged, or a downloaded software release is being installed. The data being copied overwrites the contents of the target area.

Syntax

You can input **diskcopy** in one-line entry from the standalone utility shell only. When the command is invoked, a help line and the **>** prompt appear.

Before using **diskcopy**, run **sync** and press to ensure all system buffers are flushed to the disk; then input **diskcopy** and press again. If errors occur, repeat the **diskcopy**. To exit from **diskcopy**, press at the **>** prompt (then the **UTILITY>** prompt appears). To halt a copy program in progress, press .

```
UTILITY> diskcopy
Type ? for help
> <source> <target> <size> -f [offset] -t [offset]
```

Parameters

This section contains explanations of parameters used with **diskcopy**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

-f offset

If **diskcopy** is not to begin at sector 0, specifies (in 256-byte sectors) an optional *from offset*. (Offsets must be specified in multiples of four because there are four sectors per block.)

size

Specifies the copy size, in 256-byte sectors, by a number: decimal, octal (beginning with 0), or hexadecimal (beginning with 0x or #). The default is the size of the primary file system.

source

Specifies the source disk device where the data resides (*dskp0*, *dskp3*, *dsk0*, or *dsk3* for blocked devices; *rdskp0*, *rdskp3*, *rdsk0*, or *rdsk3* for raw devices). Device names not starting with '/' are assumed to be in '/dev'. For example: *rdskp0* is the same as specifying */dev/rdskp0* or *dskp0*.

target

Specifies the target disk device where the data resides (*dskp0*, *dskp3*, *dsk0*, or *dsk3* for blocked devices; *rdskp0*, *rdskp3*, *rdsk0*, or *rdsk3* for raw devices). Device names not starting with '/' are assumed to be in '/dev'. For example: *rdskp0* is the same as specifying */dev/rdskp0*.

Parameters *(continued)***-t offset**

If **diskcopy** is not to begin at sector 0, specifies (in 256-byte sectors) an optional *to offset*. (Offsets must be specified in multiples of four because there are four sectors per block.)

```
UTILITY> diskcopy
Type ? for help.

> /dev/rdiskp0 /dev/rdskso

Current source offset:
19e00
>
  Ctrl  D
UTILITY>
```

SCREEN 8-20. One-line Entry/Output: Copying Data from One Disk to Another Disk**System Responses**

This section contains the system responses for **diskcopy**.

INPUT ERROR:

Missing device specification.

>

Device specifications are missing.

<device> not found.

An invalid device name was entered. If both device names are invalid, a response is only displayed for the first device in the command string (that is, for the source device). If the command cannot be completed because of a hardware error, an alarm is output.

NO KEY PHRASE:

Can't write to block <num>; retrying.

Up to three attempts were made to write to the block while the command was executing.

Can't write to block <num>.

Three attempts to write to the block were unsuccessful.

Type ? for help.

>

The **diskcopy** command was entered at the **UTILITY>** prompt. If your response to the > prompt is ? the help screen appears.

diskcpvfy

The **diskcpvfy** command enables you to copy and verify data stored on disks. The system informs you as it reads, writes, and compares data being copied and verified; **diskcpvfy** takes about 10 minutes. If **diskcpvfy** cannot read or write a block of data, a system response appears. The program tries a second time to read a bad block, and then reads good sectors within that same block.

Syntax

You can input **diskcpvfy** in one-line entry from the standalone utility shell only. The syntax for **diskcpvfy** is similar to **diskcopy**.

To exit from **diskcpvfy**, press at the **>** prompt to get the **UTILITY>** prompt. To halt an in-progress copy operation, press . It terminates the operation at the end of the current read, write, or verify cycle. If errors occur, use the disk verify, repeat **diskcpvfy**, command.

Parameters

Refer to the parameter definitions supplied in **diskcopy**.

```
UTILITY> diskcpvfy
Type ? for help.
> /dev/rdiskp1 /dev/rdiskp3

Current source offset:
19e00
>  
UTILITY>
```

SCREEN 8-21. One-line Entry/Output: Copying and Verifying Data

System Responses

Refer to the system responses supplied in **diskcopy**.

diskvfy

The **diskvfy** command enables you to verify data stored on disks. The system informs you as it reads, writes, and compares data being verified; **diskvfy** takes about 10 minutes. If **diskvfy** cannot read or write a block of data, a system response appears. The command tries a second time to read a bad block and then reads good sectors within that same block.

Syntax

You can input **diskvfy** in one-line entry from the standalone utility shell only. The syntax is similar to **diskcopy**.

To exit from **diskvfy**, press at the **>** prompt to get the **UTILITY>** prompt. To terminate the process of an in-progress **diskvfy**, press . It terminates the operation at the end of the current read, write, or verify cycle. If errors occur, repeat **diskvfy**.

Parameters

Refer to the parameter definitions supplied in **diskcopy**.

```
UTILITY> diskvfy
Type ? for help.
> /dev/rdiskp1 /dev/rdiskp3
Current source offset:
19e00
>


UTILITY>
```

SCREEN 8-22. One-line Entry/Output: Verifying Data

System Responses

Refer to the system responses supplied in **diskcopy**.

dktobns

The **dktobns** command, which is executed from the utility shell, enables you to update module addresses interactively from their old *Datakit II* VCS shelf assignments to their new BNS-2000 shelf assignments. You are prompted for the *Datakit II* VCS shelf to which the module is currently assigned and the BNS-2000 shelf to which the module is being assigned.

A one-to-one correspondence must exist between the old *Datakit II* VCS shelf number and the new BNS-2000 shelf number. The old and new shelf assignments are displayed after each entry. If a new BNS-2000 shelf assignment is not specified, the *Datakit II* VCS shelf is not converted in the database. Shelf assignments can be changed at any time before the session is ended. Answering y (Yes) to a Yes/No prompt at the end of the session allows you to change the mapping.

This utility command upgrades system configuration files in the */etc* directory (*/etc/cfdata*, */etc/comments*, */etc/sysgen*) to the current BNS-2000 release. The *Datakit II* VCS configuration files must be in the disk backup area prior to running the **dktobns** command.

Any unsupported modules should be removed from the shelf and the database before running **dktobns**. Data for unsupported modules is not converted for the BNS-2000 database.

Syntax

You can input **dktobns** in prompted entry from the utility shell.

```
<STARTUP> $ sh
UTILITY> dktobns
      Converting from Release <code> configuration archive.

      >>> Enter DK shelf to BNS shelf Mapping <<<

      Enter 'q' to end the input
      Enter 'd' to delete a set of mapping

      Enter a DK shelf No[0-7](Enter 'q' to quit):

      Enter a BNS shelf No[1-7](Enter 'd' to delete):

      DK shelf      BNS shelf
      -----
      0              7

      Enter a DK shelf No[0-7](Enter 'q' to quit):

      Enter a BNS shelf No[1-7](Enter 'd' to delete):
```

Syntax (continued)

Do you want to change the mapping (y/n)?

Parameters**Enter a BNS shelf No[1-7]**

Specifies the number of the new BNS-2000 shelf assignment. Shelf 0 of a BNS-2000 shelf must be reserved for the Series M2 Switch Shelf. High-speed extension shelves can only be assigned to shelf 1, 2, or 3. Low-speed (Series M1) shelves can be assigned to any shelf from 1 to 7. Shelves 1, 2, and 3 should be reserved for high-speed (Series M2) shelves.

Enter a DK shelf No[0-7]

The number of the old *Datakit II* VCS shelf assignment. *Datakit II* VCS shelves are from 0 to 7. The Control Shelf is not necessarily shelf 0. A CIM for the Control Shelf has to be physically installed in a Series M2 Switch Shelf before database conversion. Therefore, the *Datakit II* VCS Control Shelf must be mapped to the BNS-2000 shelf number corresponding to the position of the predetermined CIM. The **dktobns** utility determines if an invalid second Control Computer entry is made during the mapping. If an invalid entry is made, an error message is displayed. (See the System Responses section for this command).

```

UTILITY> dktobns
Converting from Release <code> configuration archive.
>>> Enter DK shelf to BNS shelf Mapping <<<
      Enter 'q' to end the input
      Enter 'd' to delete a set of mapping
Enter a DK shelf No[0-7](Enter 'q' to quit): 0
Enter a BNS shelf No[1-7](Enter 'd' to delete): 6
      DK shelf      BNS shelf
      -----
      0              6
Enter a DK shelf No[0-7](Enter 'q' to quit): 1
Enter a BNS shelf No[1-7](Enter 'd' to delete): 7
Enter a DK shelf No[0-7](Enter 'q' to quit): 7
Enter a BNS shelf No[1-7](Enter 'd' to delete): 1
      DK shelf      BNS shelf
      -----
      0              6
      1              7
      .              .
      .              .
      7              1
Do you want to change the mapping (y/n)? n

```

SCREEN 8-23. One-line Entry/Output: Running the dktobns Utility

Reporting

During the conversion, information is displayed on the terminal after each module is converted.

After the conversion is completed, you can get a report of old and new shelf assignments by running the **cat /etc/dktobns.rpt** command at the BNS-2000 shell prompt. The output of **cat** lists adjusted modules only; it includes the node name, mapping table, module type, *Datakit II* VCS module number, BNS-2000 module number, and the conversion results (PASS or FAIL) for each module.

```
CC0> cat /etc/dktobns.rpt
```

DKII/BNS CONVERSION FOR NODE: visa

DKII/BNS SHELF MAPPING TABLE

DK Shelf	BNS Shelf
-----	-----

0	6
1	7
2	5
4	4
6	3
7	1

DKII/BNS MODULE CONVERSION TABLE

Module-type	DK mod #	BNS mod #	Status
=====	=====	=====	=====
TRKT1	3	99	PASS
SFT	4	100	PASS
SFT	5	101	PASS
SWT	6	102	PASS
TRKHS	7	103	PASS
TY12	8	104	PASS
SYNC8	10	106	PASS
DKAP	11	107	PASS
DKAP	12	108	PASS
SYNC8	17	113	PASS
SWT	21	117	PASS
SYNC8	24	120	PASS
SAMSL	33	81	PASS
SAMSL	34	82	PASS
TY12	100	52	PASS
SWT	101	53	PASS
TRKT1	103	55	PASS
SFT	106	58	PASS
SWT	109	61	PASS
DKAP	112	16	PASS
TRKHS	126	30	PASS

(Note: Only adjusted modules are listed)

*** DK II/BNS-2000 conversion process complete ***

SCREEN 8-24. Sample: Datakit II VCS to BNS-2000 Conversion Report

System Responses

- Cannot upgrade comment, <id no.>. Database error in deb_ptcmp: 9 (0). Use enter comments to reenter data.
- DK shelf 0 is mapped to BNS shelf 6
DK shelf 1 is mapped to BNS shelf 1
BNS CC0 shelf must be in a lower number shelf than BNS CC1
*** System will assign BNS slot 30 (at shelf 1) to CC0,
*** and assign BNS slot 110 (at shelf 6) to CC1

Assuming that shelf 0 and 1 are the dual Control Computer shelves in *Datakit II* VCS, the second Control Computer is assigned to a lower numbered shelf.

dupdisk

The **dupdisk** command provides a simplified way to copy the VTOC (volume table of contents), and the contents of partition 0 and partition 3 from one disk drive to another disk drive. It can be used on dual-disk configurations running on the same Control Computer complex when software must be upgraded to the next release.

NOTE: For dual Control Computer configurations, the standby Control Computer must be brought down to the monitor mode.

Syntax

You can input **dupdisk** in one-line entry only from the standalone utility shell or the operations utility shell.

```
UTILITY> dupdisk
```

Parameters

None.

```
UTILITY> dupdisk
Copying Active Disk to Standby Disk.
Copying the primary file system.
Type ? for help.
>
Current source offset:
19e00
>

Checking the new file system.
*** Adjustments to the primary file system are expected
*** as a result of copying a live file system.

/dev/rdsks0
File System: <name> Volume: <number>

** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
FREE INODE COUNT WRONG IN SUPERBLK
FIXED
```

SCREEN 8-25. One-line Entry/Output: Using dupdisk

One-line Entry/Output: Using dupdisk *(continued)*

```

** Phase 5 - Check Free List
5 BLK(S) MISSING
BAD FREE LIST
SALVAGED
** Phase 6 - Salvage Free List
547 files 45886 blocks 6982 free
*** FILE SYSTEM WAS MODIFIED ***

Copying the staging file system.
. . .
Checking the staged file system.
/dev/rdsks1
File System: <name> Volume: <number>
. . .
Copying the standby file system.
. . .
Checking the standby file system.
/dev/rdsks3
File System: <name> Volume: <number>
. . .
UTILITY>
```

System Responses

If an error occurred during command execution, the response **command failed** is printed and the command process exits with a return code 1.

exit

exit

The **exit** command enables you to leave the operating utility shell mode and go into the operations mode.

NOTE: The **exit** command performs the same functions as the key sequence:

Control D .

Syntax

You can input **exit** in one-line entry from the operations utility shell only.

```
UTILITY> exit
```

Parameters

None.

```
UTILITY> exit
CC0>
```

SCREEN 8-26. One-line Entry: Going from Utility Mode to Operations Mode

System Responses

The **exit** command does not have any associated system responses.

fsck

The **fsck** command enables you to audit and correct data inconsistencies found in file systems in an interactive mode. Do not run **fsck** on the primary file system while in the operations utility shell (the **UTILITY>** prompt) because it forces a system reboot that could destroy the file system. If **fsck** finds the file system to be consistent, then the number of files, number of blocks used, and number of blocks free are reported. If **fsck** finds the file system to be inconsistent, it prompts you to concur with each correction. If data is lost during corrective action, the diagnostic report shows the amount and the severity of the loss.

In addition, **fsck** removes—in a mode that optionally can be made transparent (*unseen*)—empty files or directories and forces the reconnection of directories that are not empty. The name assigned is the inode number. The files and directories that have been allocated but are not empty are moved to a UNIX-like *lost+found* directory. This directory must already exist in the primary file system being checked and it must have empty slots in which entries can be made. A *lost+found* directory is made by copying files to the directory and removing them before **fsck** is executed.

Inconsistencies found during the execution of **fsck** include:

- Blocks claimed by more than one inode or those on the free list; blocks claimed by an inode or those on the free list outside the file system range; blocks not accounted for anywhere (unreferenced files)
- Incorrect link counts
- Size checks: the wrong number of blocks; their directory size is not 16-byte aligned
- Bad inode format
- Directory checks: a file is pointing to an unallocated inode; an inode number is out of range
- Super block checks: more than 65536 inodes exist; there are more blocks for inodes than there are blocks in the file system
- Bad free block list format
- Total free block and/or free inode count is wrong

Syntax

You can input **fsck** in one-line entry only from the operations utility shell or the standalone utility shell. Run **fsck** on the primary file system only when you are in the standalone utility shell (the **<STARTUP> \$** prompt). The system should always be rebooted after running **fsck**, especially if errors were found and corrected.

From the operations utility shell:

```
CC0> utilsh
UTILITY> fsck <-option(s)> <file-system>
```

From the standalone utility shell:

```
<STARTUP> $ fsck <-option(s)> <file-system>
```

Parameters

This section contains explanations of parameters used with **fsck**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

-D

Specifies that directories are to be checked for bad blocks. This option is especially useful after a system crash.

-f

Specifies that the fast version of **fsck** is to be executed; meaning, the block and sizes are checked in Phase 1; the free list is checked in Phase 5; and, if necessary, the free list is reconstructed in Phase 6.

file-system

Specifies the file system to be checked: *dskp0*, *dskp2*, *dskp3*, *dsks0*, or *dsks3* for blocked devices; *rdskp0*, *rdskp3*, *rdks0*, or *rdks3* for raw devices. Executing **fsck** on blocked devices while in the utility shell causes an automatic system reboot which is recommended. When executing **fsck** in the startup shell, use **reboot** to force a system reboot.

-n

Specifies a *no* response to all prompts that **fsck** displays.

-q

Specifies that **fsck** is to execute quietly; meaning, size-check messages are not printed in Phase 1; unreferenced FIFOs are removed; and if required, superblock counts are automatically fixed and the free list is salvaged.

-S X

Specifies that the free list is to be conditionally reconstructed. The free list is rebuilt **only** if discrepancies are not found in the file system. This option, which is similar to *-s X*, is useful to force free list reorganization on an uncontaminated file system. If you specify *S*, the default is a *no* response to all **fsck** questions.

-s X

Specifies that the free list is to be ignored and a new free list is to be unconditionally reconstructed by rewriting the file system superblock. Use **umount** to unmount the file system before executing this option. If executing **umount** is impossible, make sure the system isn't busy (for example, that modules are not downloading) and is rebooted immediately after after executing **fsck** with *-s X*. Rebooting the system ensures that the old copy of the superblock is not used or written to the file system.

The *-s X* option enables you to create an optimal free list organization. The format of *X* is:

-sBlocks-per-cylinder : blocks-to-skip

If *X* is not specified, the system uses the initial values specified when the file system was created. If values were not specified at that time, then *400 : 7* is used.

Parameters *(continued)***-t**

Specifies that **fsck** is to use a scratch file if it cannot obtain enough memory to keep its tables. If **-t** is specified, the scratch file is named in the next argument; if **-t** is not specified, **fsck** prompts for a scratch file. Do not use the existing file. If the file specified is not a special file or does not exist, **fsck** removes it upon completion.

-y

Specifies a yes response to all prompts that **fsck** displays.

```
<STARTUP> $ fsck -y
/dev/dskp0
File System: <name> Volume: <number>
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
FREE INODE COUNT WRONG IN SUPERBLK
FIX? yes

** Phase 5 - Check Free List
2 BLK(S) MISSING
BAD FREE LIST
SALVAGE? yes

** Phase 6 - Salvage Free List

SET FILE SYSTEM STATE TO OKAY? yes

435 files 25470 blocks 1398 free

*** ROOT FILE SYSTEM WAS MODIFIED ***
***** REBOOTING (NO SYNC!) *****

*** Trying To Boot From Primary Disk ***

A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
<remainder of boot screen appears>
```

SCREEN 8-27. One-line Entry/Output: Running fsck from the Standalone Utility Shell

```
UTILITY> fsck -n
/dev/dsks0 (NO WRITE)
File System: <name> Volume: <number>
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List
FILE SYSTEM STATE NOT SET TO OKAY
435 files 25470 blocks 1398 free
```

SCREEN 8-28. One-line Entry/Output: Running fsck from the Operations Utility Shell

```

CC0> utilsh
MINI-SH: What can I do for you?
UTILITY> fsck -y /dev/dsks0

/dev/dsks0
File System: <name> Volume: <number>
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
UNREF FILE I=405  OWNER=0  MODE=10000
SIZE=0  MTIME=Sep 14 09:50 1989  -- CLEARED
UNREF FILE I=406  OWNER=0  MODE=10000
SIZE=0  MTIME=Sep 14 09:50 1989  -- CLEARED
UNREF FILE I=409  OWNER=0  MODE=10000
SIZE=0  MTIME=Sep 14 09:50 1989  -- CLEARED
UNREF FILE I=410  OWNER=0  MODE=10000
SIZE=0  MTIME=Sep 14 09:50 1989  -- CLEARED
FREE INODE COUNT WRONG IN SUPERBLK
FIX? y

** Phase 5 - Check Free List
4 BLK(S) MISSING
BAD FREE LIST
SALVAGE? y

** Phase 6 - Salvage Free List
410 files 24458 blocks 210 free
***** REBOOTING (NO SYNC!) *****

*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type 'help' or '?' for help
LOADER>

```

SCREEN 8-29. One-line Entry/Output: Running fsck from the Operations Utility Shell

System Responses

The **fsck** command does not have any associated system responses.

loadrel

The **loadrel** command enables you to read in a release tape and write it to the staging partition of the active disk. The command can be used while the Control Computer is operational.

Syntax

You can input **loadrel** only in one-line entry from the operations utility shell.

```
UTILITY> loadrel
Which controller is active (0 or 1, q to quit)?
Which tape drive contains the release tape (0 or 1, q to quit)?
Which kind of system: CCM or ECPU (c or e, q to quit)?
<System Responses>
```

Parameters

This section contains explanations of parameters used with **loadrel**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

Which controller is active?

Specifies the number *0* if the Control Computer in shelf/cabinet 0 is active; 1 if Control Computer in shelf/cabinet 1 is active, or *q* to quit the command prompting sequence.

Which kind of system: CCM or ECPU?

Specifies if the Control Computer is running on a CCM System (*c*) or an ECPU system (*e*); or whether you want to quit (*q*) the command prompting sequence.

Which tape drive contains the release tape?

Specifies the number *0* if the tape in shelf/cabinet 0 contains the release tape; 1 if the tape in shelf/cabinet 1 is contains the release tape, or *q* to quit the command prompting sequence.

```
UTILITY> loadrel
Which controller is active (0 or 1, q to quit)? 0
Which tape drive contains the release tape (0 or 1, q to quit)? 0
Which kind of system: CCM or ECPU (c or e, q to quit)? c
Reading the disk layout file (about 1 minute).
Comparing the new and old disk layout.
The new disk layout matches the active disk layout.
Reading the release into the staging area (about 30 minutes).
<Day> <Date> <hh:mm:ss> <year>
Type ? for help.
>
Current source offset:
19e00
>
<Day> <Date> <hh:mm:ss> <year>
Validating the release.
The new release is ready to be installed.
UTILITY>
```

SCREEN 8-30. One-line Entry/Output: Loading a Release from Tape to the Active Disk

System Responses

This section contains the system responses for **loadrel**.

COMMAND FAILED:

Cannot run loadrel from stage root device /dev/dskp1.

Reboot from the primary or standby file system.

The controller is booted on partition 1. Reboot from partition 0.

Copy of release from tape to staging partition failed.

The release copy failed. Check the tape and try the command again. If it fails again, call the Lucent Customer Assistance Center (CAC).

Could not read from the tape.

The release tape is not in the specified drive. Check that the release tape is in the correct tape drive, re-run **loadrel**, and enter the correct drive number.

Invalid controller number <n>.

The number you entered for the active controller is incorrect. To check which controller is active, type **exit** at the utility prompt, and run **dstat cc** at the **CC0>** prompt. Then return to the operations utility shell and re-run **loadrel**, entering the correct number for the active Control Computer.

The new disk layout must be installed before the new release can be read from tape. Exit the utility shell and run install disklayout before proceeding.

The disk layout file on the tape is different from the disk layout currently active on the disk. Run **install disklayout** from the **CC0>** operations mode prompt, and then run **loadrel** to continue loading the tape.

The new release is ready to be installed.

The **loadrel** command has executed successfully, and you can proceed to install a new software release.

ls

The **ls** command enables you to list the directory contents for each *directory* argument you enter. For each *file* argument entered, **ls** repeats the filename and any other information requested. The output is sorted alphabetically by default. When you do not enter an argument, the system lists the current directory. When several arguments are specified, the system first sorts the arguments appropriately; file arguments are processed before directories and their contents.

Syntax

You can input **ls** in one-line entry from the operations utility shell or the standalone utility shell.

```
UTILITY> ls <-option(s)> <filenames>
```

Parameters

This section contains explanations of parameters used with **ls**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

- A**
Specifies that all entries beginning with a period (.) are to be suppressed.
- a**
Specifies that the list is to include all entries. In the absence of this option, entries beginning with periods (".", and "..") are not listed.
- b**
Specifies that printing of non-graphic characters must be forced in octal \ddd notation.
- C**
Specifies that multicolumn output is to be forced. This option is the default when output is sent to a terminal.
- c**
Specifies that the list should be sorted and printed by the time of file creation.
- d**
Specifies that only the name is to be listed if the argument is a directory; -d is often used with -l to obtain the status of a directory.
- g**
Specifies that the list is to include the group ownership of the file in long format.
- i**
Specifies that the i-number for each file is to be printed in the first column of the report.
- l**
Specifies that the list is to be displayed in long format showing the mode, number of links, owner, group, size in bytes, and the last modification date for each file. For a special file, the size field contains major and minor device numbers.

Parameters *(continued)*

The mode printed under the **-l** option contains 11 characters. When the first character is **d**, the entry is a directory; **b**, the entry is a blocked special file; **c**, the entry is a character special file; **p**, the entry is a FIFO (or pipe); **-**, the entry is an ordinary file.

The next nine characters are interpreted as three sets of three bits each. The first set refers to owner permissions; the second to permissions of others in the user group; the third to all others. The three characters within each set signify permission to read (**r**), write (**w**), or execute (**e**) the file as a program. (Execute permission for a directory means the ability to search the directory for a specified file.) In addition, the **-** means the indicated permission has not been granted. The group-execute permission character is shown as **s** if the file has the set-group-id bit set; the user-execute permission character is shown as **S** if the file has the set-user-id bit set.

The last character of the mode (normally **x** or **-**) is **t** if the 1000 (octal) bit of the mode is on; see **chmod** for the meaning of this mode. When directory file sizes are listed, the system prints a total count of blocks, including indirect blocks. **Newline** and **tab** are considered printing characters in filenames. The output device is assumed to be 80 columns wide.

- m**
Specifies that the format is to be streamed out.
- n**
The same as **-l**, except the owner's UID and group's GID numbers are printed, rather than the associated character strings.
- q**
Specifies that the printing of non-graphic characters in filenames is to be the character **?**. (This option is the default when the output device is a terminal.)
- R**
Specifies that subdirectories are to be listed recursively.
- r**
Specifies that the order of sort is to be reversed, as appropriate, in alphabetical order or with oldest file first.
- s**
Specifies that the list is to include the size of each file in 512-byte blocks.
- t**
Specifies that the list is to be sorted by time modified (latest first) instead of by name.
- u**
Specifies that the list is to be sorted and printed by the time of last use (access), not the time of the last modification (the **-t** option).

Parameters *(continued)*

- x**
Specifies multicolumn output with entries sorted across rather than down the page.
- 1**
Specifies that one-entry per line is to be forced in the output format. This option is the default when output is not sent to a terminal.

UTILITY> ls -g
<system output>

SCREEN 8-31. One-line Entry: Listing Directory Contents with Group Ownership of File**System Responses**

Other than command output, **ls** does not have any associated system responses.

mcsusage

From the current node configuration database, the **mcsusage** command generates a report of module channel, controller channel, and Switch module use of RAM. Because absolute node limits exist for these resources, this report can be used to monitor if a node is approaching resource limits. Each **mcsusage** report identifies the name of the node being monitored.

Syntax

You can input **mcsusage** in one-line entry *only* from the operations utility shell.

```
UTILITY> mcsusage
```

Parameters

None.

```
UTILITY> mcsusage
Module, Channel, and Channel Switch Ram Usage Report (Node=salt)
Part 1: Module and Channel Usage Inventory
```

Type	Nmbr Mods	Mod Chans	Cntrl Chans	Switch Ram
SERVICE MODULES:				
x25p	7	2176	14	4352
ty12	1	13	12	52
x25	1	105	2	210
dkap	1	512	2	1024
x75	1	37	2	74
frm	1	69	2	138
INTER_NODAL TRUNKS:				
trkhs	1	32	4	64
swt	1	56	4	112
CONCENTRATORS:				
mpc	2	1024	6	4096
sam	1	136	2	272
MODULES ON CONCENTRATORS:				
x25p	2	410*	4	820*
ty12	1	13*	12	52*
TOTALS:	20	4160	66	10394

* These counts are already accounted for by the

SCREEN 8-32. One-line Entry/Output: Monitoring Module, Controller Channel, and Switch RAM Usage

One-line Entry/Output: Monitoring Module, Controller Channel, and Switch RAM Usage (continued)

```

Part 2: Controller Channel Usage
      Used for Modules:      66
    Used for Call-Setup: 1342
      Total Used:    1408
    Maximum Available: 2048
      Percent Used:   68%

Part 3: Switch Ram Usage
      Used for Internal Tables: 1024
      Used for Modules: 10394
    Used for Controller:  2816
      Total Used:    14234
    Maximum Available: 65536
      Percent Used:   21%

UTILITY>

```

Report Fields

Cntrl Chans

The total number of controller channels that are permanently allocated for all modules of **Type** . For some types of modules, permanent controller channels are allocated for each of its allocated module channels; for others, only a small number of overhead channels are allocated permanently.

CONCENTRATORS

The section of Part 1 which lists those module types that are used for concentrators and SAMs.

INTER-NODAL TRUNKS

The section of Part 1 which lists those module types that are used for internodal trunks.

Nmbr Mods

The number of modules of **Type** found attached to the node backplane.

Maximum Available (Part 2)

The maximum number of controller channels that are available on the node.

Maximum Available (Part 3)

The maximum number of **Switch ram** words that are available on the node. For the ECPU controller this will value will be 65536.

Mod Chans

The total number of module channels across all modules of **Type** that are allocated in the node database.

MODULES ON CONCENTRATORS

The section of Part 1 which lists those modules types that are administered on concentrators.

Report Fields (*continued*)**Part 1**

Part 1 of the MCS report lists all module types that are configured in the active database. The report distinguishes between those modules on the node backplane and those on concentrators. The node attempts to allocate these resources for all backplane modules configured in the node database, whether they are in service or out-of-service; therefore, the report contains both in-service and out-of-service modules. Any module that is physically present in the node, but not configured in the database will not show up in the report.

Part 2

Part 2 of the MCS report summarizes controller channel usage and compares this to the maximum limit of what is available on the node.

Part 3

Part 3 of the MCS report summarizes Switch RAM usage and compares this to the maximum RAM available on the node. Usage is based on the amount of RAM used when the node is initialized. During node operations, as modules are repeatedly removed from and restored to service, some blocks of Switch RAM may be left empty and become unusable. This is called *fragmentation* of Switch memory. The effects of fragmentation may prevent the node from allocating additional Switch RAM when restoring a module to service, even when this report shows that enough RAM is available.

Percent Used (Part 2)

The percentage of available controller channels that the node attempts to allocate for its operations. If this value is less than 100%, the node is operating within Node Engineering Guidelines (see "1994 AT&T User Training Seminar on Data Networking, Seminar Module 10"). If this value is greater than 100%, unused modules may be configured in the database that should be deleted. If the value is greater than 100% and all modules are in service, node operations will be affected. The degree of the effect will depend on the types of modules being used and the profile of the peak call setup demand. The more this value exceeds 100%, the more likely you are to experience delays in call setups because of the limited resources.

Percent Used (Part 3)

The percentage of available switch ram words that the node needs to allocate at node initialization. If this percentage is less than 100%, then the node is operating within Node Engineering Guidelines. If this value is greater than 100% then you may have difficulty in restoring some modules to service. Also, even when this value is less than 100%, the greater its value the more difficulty you may encounter when repeatedly removing and restoring modules from and to service due to fragmentation of Switch RAM.

Report Fields *(continued)***SERVICE MODULES**

The section of Part 1 which lists those module types that directly provide end-user services.

Switch Ram

The total number of words of Switch RAM that are allocated for all modules of **Type** attached to the node backplane.

Total Used (Part 2)

The total of all controller channels that the node attempts to allocate. This is the sum of the preceding two rows in Part 2.

Total Used (Part 3)

The total of all **Switch ram** words that the node allocates at node initialization. This is the sum of the preceding three rows in Part-3.

Type

The type of module found on the nodal backplane. If one or more modules of the same type are found configured on the node and attached directly to the nodal backplane (i.e. not on a concentrator or sam), then there will be a single line on the report

Used for Call-Setups (Part 2)

The number of additional controller channels that the node will attempt to allocate for use by transient call setups. This is a pool of controller channels that are reused by different modules when calls are initiated and again when they are completed. This value is not calculated but is derived as the difference between the total used and the number used for modules.

Used for Controller (Part 3)

The number of **Switch ram** words This is derived as two times the **Total Used** channels from Part 2.

Used for Internal Tables (Part 3)

This is a value that is always allocated for internal use, even when there are no modules configured in the database.

Used for Modules (Part 2)

The number of controller channels permanently allocated for communication to the modules. This value is taken from the total of the **Cntrl Chans** column on Part 1 of the report.

Used for Modules (Part 3)

The number of Switch RAM words that are allocated for use by module circuits. This value is taken from the total of the **Switch ram** column on Part 1 of the report.

System Responses

The **mcsusage** command does not have any associated system responses.

mount

The **mount** command enables you to put a removable file system is on a *special* device. The command maintains a table of mounted devices and, when invoked without arguments, displays the table on screen.

Syntax

You can input **mount** in one-line entry from the operations utility shell or the standalone utility shell.

To display a table of mounted devices:

```
UTILITY> mount
```

To mount a removable file system:

```
UTILITY> mount <device> <file system> [-r]
```

Parameters

This section contains explanations of parameters used with **mount**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

device

Specifies the name of the special device where the file system is mounted to be: */dev/dskp0*, */dev/dskp3*, */dev/rdskp0*, */dev/rdskp3*, */dev/dsk0*, */dev/dsk3*, */dev/rdsk0*, and */dev/rdsk3*. (The device name always starts with */dev/*.)

file system

Specifies the root name of the newly mounted file system which is the name of the existing directory.

-r

Specifies that the file system is to be mounted as *read-only*. The *-r* is optional except for physically write-protected systems that must be mounted as read-only. Otherwise, errors are generated when access times are updated.

```
UTILITY> mount /dev/dskp0 /fs1
```

SCREEN 8-33. One-line Entry: Mounting a File System on a Special Device

System Responses

The **mount** command does not have any associated system responses.

mv

The **mv** command enables you to move the contents of a file to a specified target. The target can be a file (designated by another name) or a directory. The contents of the original file are removed from the original file and reside in the target. The group and owner of the moved file are the same as those of the user. The system uses the time of the move as the target's last modification time (or the last access time if the target did not exist). This same time is also used as the last access time of the moved file.

If **mv** detects that the target prohibits writing, it displays the mode, prompts for a response, and reads one line from the standard input device. If the line begins with **y**, **mv** is executed, if permissible; if not, the command exits. Questions are not asked and **mv** is completed when the **-f** option is used, or if the standard input device is not a terminal.

If *file1* is a directory and *target* is a directory, the directory can be renamed only if the two directories have a common parent; *file1* is renamed *target*. If *file1* is a file (not a directory), and *target* is a link to another file with links, the other links remain and *target* becomes a new file.

Syntax

You can input **mv** in one-line entry from the operations utility shell or the standalone utility shell.

```
UTILITY> mv <file1> [<file2 ...>] <target>
```

Parameters

This section contains explanations of parameters used with **mv**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

filex

Specifies the name of the file or files to be moved. The names of *file1* and *target* cannot be the same. If the name of the *target* is also the name of an existing file, **mv** overwrites the old contents of the target.

target

Specifies the name of the destination file or directory. When renaming a file, *target* is the new name of the file. If *target* is not the name of an existing file, then a new file is created. The new file has the same mode as *file1*. If *target* is a directory, then one or more files are moved to that directory.

```
UTILITY> mv file1 directory1
```

SCREEN 8-34. One-line Entry: Moving a File to a Directory

System Responses

The **mv** command does not have any associated system responses.

reboot

The **reboot** command enables the Control Computer to be rebooted. Depending on the position of the controller mode switch, **reboot** puts the active Control Computer in operations mode or loader mode. When the controller mode switch is in the ENABL position, the Control Computer goes into operations mode when **reboot** is input. If the controller mode switch is in the DIAG position because console security is being initially administered or the port password is being changed, execution of **reboot** puts the Control Computer in loader mode.

Syntax

You can input **reboot** in one-line entry from the operations utility shell or the standalone utility shell.

```
UTILITY> reboot [-n] [-h]
```

Parameters

This section contains explanations of parameters used with **reboot**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

-h

Displays the help screen.

-n

Specifies that the database has not been synchronized before rebooting. Omitting this option synchronizes the database first.

```
UTILITY> reboot -h
Usage: reboot [-n]
-n      no sync
UTILITY>
```

SCREEN 8-35. One-line Entry/Output: Displaying the Help Screen for Rebooting

```
UTILITY> reboot
Are you sure? y
*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Active CC
Loading text
Loading data
Clearing bss
<remaining system output>
```

SCREEN 8-36. One-line Entry/Output: Rebooting*

System Responses

The **reboot** command does not have any associated system responses.

* The controller mode switch is in the ENABL position.

rm

The **rm** command enables you to delete one or more files from a directory or the entire contents of a directory. If you remove an entry that was the last link to a file, the file is destroyed.

Removal of a file requires write permission in its directory, but it does not require read or write permission for the file itself.

If a file does not have write permission and the input device is a terminal, file permissions are printed and a line is read from the terminal. If that line begins with a **y**, the file is deleted. Otherwise, the file is not deleted. Questions are not asked when the **-f** option is specified or the input device is not a terminal.

If the **-i** (interactive) option is specified, **rm** asks whether to delete each file. When **-r** is specified, **rm** asks if it should examine each directory. If a directory name is specified with the **-r** option, the directory contents are recursively deleted; and finally, the directory itself is deleted.

Syntax

You can input **rm** in one-line entry from the operations utility shell or the standalone utility shell.

```
UTILITY> rm <-option(s)> <target>
```

Parameters

This section contains explanations of parameters used with **rm**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

-f

An optional parameter specifying that questions are not to be asked before removing the file.

-i

An optional parameter specifying that the system should inquire if each file can be deleted.

-r

An optional parameter specifying that each directory is to be examined before removing its contents.

target

Specifies the name of the file or directory to be removed.

```
UTILITY> rm -f file3
```

SCREEN 8-37. One-line Entry: Unconditionally Removing a File from a Directory

System Responses

The **rm** command does not have any associated system responses.

stop

The **stop** command halts execution of the Control Computer and allows you to enter the loader mode. (The utility **stop** command works the same as the operations **stop** command.)

You can execute **stop** when the controller mode switch is in the ENABL or DIAG position*. When you enter **stop** at the **UTILITY>** prompt, the Control Computer to which it is addressed halts execution, goes into loader mode, outputs the **LOADER>** prompt, and waits 45 seconds for input. If input is not received within this time, the Control Computer continues to boot. If input is received within this time, the timer is reset for 45 seconds after each character entered. After command entry, the 45-second time-out is no longer in effect.

Syntax

You can input **stop** in one-line entry from the operations utility shell only.

```
UTILITY> stop
```

Parameters

None.

```
UTILITY> stop
Are you sure? y
*** Trying To Boot From Primary Disk ***
A RECOVERY REBOOT
Reason: SOFTWARE INITIATED BY ADMINISTRATOR
Type 'help' or '?' for help
LOADER> r
Active CC
Loading text
Loading data
Clearing bss
<remaining system output>
```

SCREEN 8-38. One-line Entry/Output: Rebooting with the stop Command

System Responses

The **stop** command does not have any associated system responses.

* Unless console security is being initially administered or the port password is being changed, the controller mode switch should always be in the ENABL position.

sync

The **sync** command enables you to flush all previously unwritten system buffers to disk, ensuring that all file modifications that have been made to that point are saved.

Syntax

You can input **sync** in one-line entry from the operations utility shell or the standalone utility shell.

```
UTILITY> sync
```

Parameters

None.



```
UTILITY> sync
```

SCREEN 8-39. One-line Entry: Synchronizing System Buffers to Disk

System Responses

This section contains the system responses for **sync**.

COMMAND FAILED: Reader: periodic sync failed.

The system process of automatically and periodically updating the contents of the disk to the contents of the database has failed; therefore, data loss might have occurred.

COMMAND FAILED: Sync did not complete.

The software detected a corrupt "in core" copy of the database; the database has not been written to disk.

umount

The **umount** command enables you to "unmount" or remove a file system previously mounted on a special device.

Syntax

You can input **umount** in one-line entry from the operations utility shell or from the standalone utility shell.

```
UTILITY> umount <device>
```

Parameters

This section contains explanations of parameters used with **umount**. Refer to Syntax for the prompting sequence, system defaults, and parameter options.

device

Specifies the name of the special device where the file system is mounted to be: */dev/dskp0*, */dev/dskp3*, */dev/rdskp0*, */dev/rdskp3*, */dev/dsk0*, */dev/dsk3*, */dev/rdsk0*, and */dev/rdsk3*. (The device name always starts with */dev/*.)

```
UTILITY> umount /dev/dskp0
```

SCREEN 8-40. One-line Entry: Removing a File System Mounted on a Special Device

System Responses

The **umount** command does not have any associated system responses.